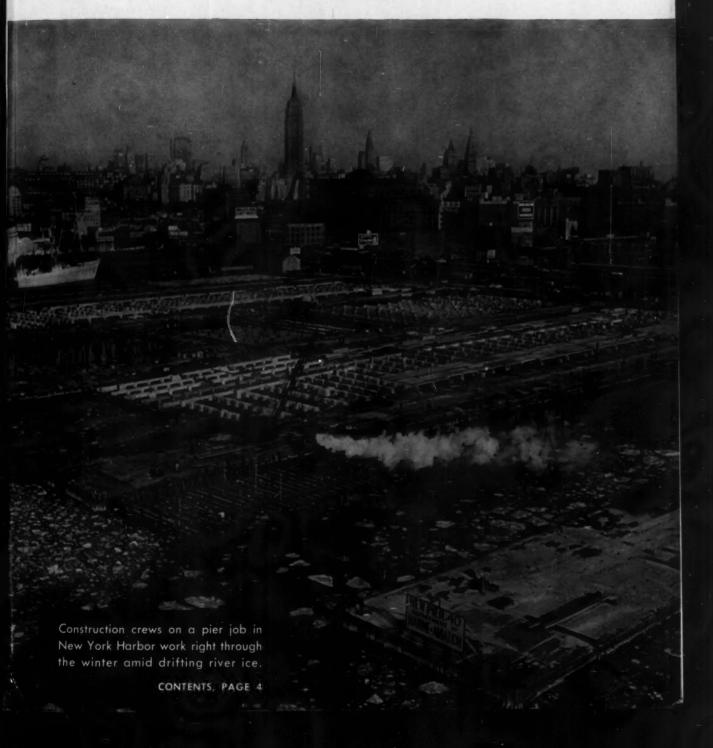
# Construction Methods AND EQUIPMENT

**MARCH, 1959** 

PRICE \$1.00

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### CUTS WIRE ROPE COSTS 50% ON TOUGH BACKFILL JOB

This was a tough one. Wide ditch — heavy, wet dirt — high line speeds over a short distance — severe reverse rope bend — an extra large bucket. Rapid wear and fatigue actually tore apart ordinary round strand rope to the tune of five to seven 50' lengths per day. Then Houston Contracting Company selected Yellow Strand Flattened Strand Wire Rope. Now, one length per day is used in place of five to seven. They cut rope costs by 50%, saved substantially in man-hours and machine down time.

What made the difference? Compare the two

illustrations above: See how each strand of Yellow Strand Flattened Strand is laid up in a triangular pattern. Contact with the sheave groove is made by many wires instead of just a few. Note the marked increase in compactness in the Flattened Strand, with greater crush resistance and 10% greater metallic area. This is the design that makes ropes, sheaves and drums last longer! For complete details about Yellow Strand Flattened Strand, contact your distributor or check with us. Broderick & Bascom Rope Co., 4203 Union Blvd., St. Louis 15, Mo.



B.F.Goodrich



# Why contractor calls B.F.Goodrich tires "the best tires for the job!"

KILLIAN-HOUSE Co. constructs roads and bridges within a 100-mile radius of San Antonio, Texas. 143 pieces of rubber-tired equipment are at work, including 30 flat bed trucks, 10 scrapers, 24 dump trucks, 30 pick-ups, 12 road rollers and 12 water trucks. The company uses B.F.Goodrich tires on this fleet because, says Partner Jack House; "They are the best tires for the job."

For example: Traction Express tires average 75,000 miles of service where previous makes gave considerably less; Tractor Grader tires are being retreaded as many as 4 times; on the new Rock Service Tubeless tires above, the company estimates retreads will save them 30% over other makes.

The new B.F. Goodrich Rock Service

tire has an enormous, double-chevron tread that defies rock cuts and bruises, grips the ground for full traction in forward or reverse. Under the tread is the B.F.Goodrich FLEX-RITE NYLON cord body that withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. This is why the FLEX-RITE NYLON body outwears even the extra-thick Rock Service tread, can be retreaded over and over.

See your B.F.Goodrich Smileage dealer today and find out how you can save on tires for all types of off-the-road jobs. He's listed under Tires in the Yellow Pages of your phone book. B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.

Enter the B.F. Goodrich Truck Tire Mileage Contest. You can win a Thunderbird or Corvette or one of 310 other prizes. See your B.F. Goodrich dealer for entry blanks.



Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

B.F.Goodrich truck tires

O The B. F. Goodrich Company

### Job Finished 3 Weeks |

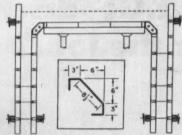


How to Pour a Tunnel in a Hurry...

#### Symons Culvert Forms The Answer

When awarded a contract to build a 340 ft. tunnel, Schweiger Construction Company, Kansas City, Mo., faced the problem of how to do it fast and as economically as possible.

Symons Culvert Forms solved the problem. They eliminated the need for any special form or job-built construction.



Schweiger used Symons 1" steel channel filler horizontally on top of 6' vertical panels on the inside of the walls. Culvert Forms were placed on top of this filler. The forms underneath were stripped with no difficulty and the fillers and culvert forms were then removed without disturbing the decking for the slab, which was left in place for an additional curing period. Walls and top slab were poured monolithically in three pours. Job was completed in three weeks.

Symons forms, shores and column clamps may be rented with purchase option. Additional information on Symons Culvert Forms is available upon request.



MORE SAVINGS FROM SYMONS

# Construction Methods AND EQUIPMENT

MARCH, 1959

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ONE OF A SERIES of advertisements to help the construction industry get better service from wire rope. CARRY TYPE SCRAPER

APRON ROPE

BOWL LIFT ROPE

EJECTOR ROPE

#### BOWL LIET BORE

6 x 25F PREformed Regular Lay Whyte Strand IWRC

#### APRON ROPE

6 x 25F PREformed Lang Lay Whyte Strand IWRC

#### EJECTOR ROPE

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# Macwhyte Scraper Ropes can lower your <u>yearly</u> rope costs!

Scraper service needs the best wire rope
— and the right rope will cut costs.

For carry-type scrapers, Monarch Whyte Strand 6 x 25F IWRC is the correct rope. It is specifically designed for the severest service wire rope can get. The outside wires are big and tough. They provide plenty of surface for abrasion-resistance. The independent wire rope core gives extra crush resistance, while the 199-wire PREformed make-up assures a flexibility that matches the rug-

ged demands of constant heavy service.

The thorough Internal Lubrication of Whyte Strand Wire Rope is a further help in extending service life under severe service. Check these features. They mean longer life — and that means less rope for you to buy!

For helpful information about Wire Rope and its correct use on contractors' equipment, write for your free copy of Bulletin 5702. It's loaded with helpful cost-saving information.

MACWHYTE

Wire Rope COMPANY

MACWHYTE WIRE ROPE COMPANY 391 Fourteenth Avenue, Kenesha, Wisconsin

Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel, Plastic Coated and Nylon Coated Wire Rope, and Wire Rope Assemblies. Special catalogs available.

RABLL DEPOTS: New Yerk 4, 35 Water St. • Pittsburgh 36, P. O. Box 10916, 353 Curry Hollow Road • Betrait 3, 75 Oakman Bivd. • Chicage 4, 228 S. Desplaines St. • St. Paul 14, 2356 Hampden Ave. • Pt. Werth 1, P. O. Box 605 • Pertiand 9, 1603 N. W. 14th Ave. Seattle 4, 07 Holgate St. • San Francisco 7, 188 King St. • Les Angeles 21, 2035 Sacramento St.

There's a Macwhyte Distributor near for Quick Service



#### ON THE COVER

Stock Construction Co. works right through the winter to complete the \$6.8-million substructure contract for new Pier 40 in New York Harbor. This aerial photo of the job was taken from a helicopter especially for Construction Methods by Ted Donaldson, photographer for New York's Dept. of Marine and Aviation, owner of the new pier.

#### **DEPARTMENTS**

Construction News	
From Washington	1
Job Talk	2
Trends in the Machinery Market	4
Construction Business	4
Picture of the Month	6
Construction News in Pictures	6
Construction 'Round the World	7
Editorial	8
Construction Men in the News	19
Sales and Service	20
Construction Equipment News	21
New Publications	23
Methods Memo	24

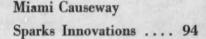
#### **NEXT MONTH**

Foundations in New Orleans are always a problem because of the high water table and the lack of bearing strata. On the rare occasions when a new building goes up in the French Quarter, the danger of damaging adjacent buildings adds to the problem. On the construction of the new Royal Orleans Hotel, the contractor has to carefully drill and sink piles.

## Pay Dirt in This Issue

Rock Cracks Up
Serving State ..... 90

Here's how Channel Constructors, a four-contractor joint venture, is producing aggregates that will go into concrete on the \$710-million Niagara Power Project in New York.



This contractor's developments include a rolling gantry for setting girders, novel piledriving templets, plastic sock grout retainers, and a floating wale for holding forms.

Tunnelers Battle
Tricky Soil Under Air . . 146

Continually changing soil conditions are causing problems for a New York tunnel builder. He sunk his shaft in free air but had to go under compressed air to turn the headings.

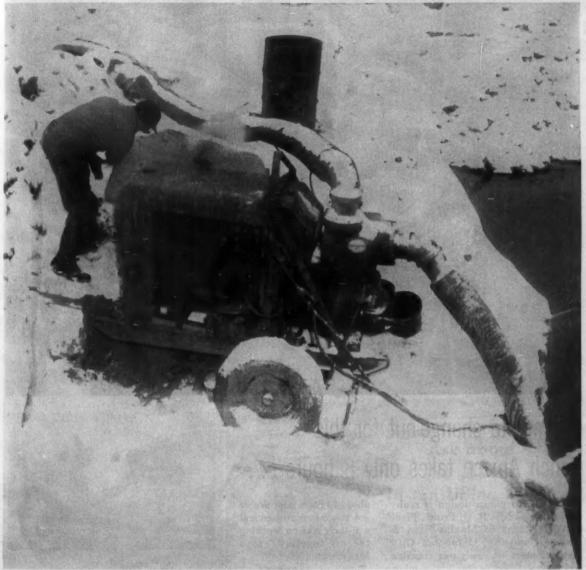






Old Pier Helps Contractor Build New Pier 86
Improved Methods Are Routine on This Building Job109
Giant Floating Derrick Handles 645-Ton Lifts
Tractors in Tandem Push-Load Scrapers140
Supers Mix Food, Fun, Business
It's a Tricky, Specialized Job
Till Makes Fill for Arctic Job
Air Tugger Pulls Pine into Tunnel

# "FOR THE TOUGH ONES, WE LIKE GORMAN-RUPP TRASH-SEWAGE PUMPS"



Model 16A2-IND30 starting up for the day's work after an overnight snowfall of 20 inches and in temperatures of 10 to 15 degrees above zero.

#### "Here, with river silt, gravel, muddy water, and ice ...

"in trenching below river level, these Gorman-Rupp Trash-Sewage Pumps do a great job. We know we can depend on them for this type of work, because we started using them 13 years ago and have liked their performance ever since. We use other types of Gorman-Rupp Contractors Pumps, too, depending on the circumstances."

So says Mr. P. J. Milano, superintendent for Milano Construction Company, Erie, Pa., who uses Gorman-Rupp equipment to beat the "must" schedules, regardless of winter weather or tough working conditions.

This is a typical field report of Gorman-Rupp Pumps in action. See your Gorman-Rupp distributor, and remember—wherever there's a tough pumping job to be done, use a dependable, trouble-free Gorman-Rupp Pump.

THE GORMAN-RUPP COMPANY 305 Bowman Street • Mansfield, Ohio



## "Complete change-out for this 8-inch Amsco takes only 8 hours . . .

"This Amsco pump design is really simple," says Mr. R. O. Pruitt, Plant Superintendent of Makins Sand & Gravel Company, Oklahoma City manufacturers of ready-mix concrete and asphalt.

"It's so simple, we never take more than 4 hours from shut-down to onstream for replacement of either impeller or suction liner." A complete change-out, impeller and suction liner never requires more than 8 hours.

"Maybe this easy repair is one of the reasons we've used Amsco pumps for

about 40 years now. We've got this 8-inch Amsco and a 6-inch Amsco working the pit together," says Mr. Pruitt.

"We get about 200 hours service out of liners, impellers and shells before rebuilding by welding. That's pumping a 50-50 sand and gravel mix," he adds.

Makins' 8-inch Amsco pump is driven by a 150 h. p. electric motor, flat-belt drive, using plain suction. Pipeline is 91' with a 40' lift. The pump lifts sand and gravel to classifying equipment.



Amsco® Dredge Pump standard sizes range from 6" to 20" discharge openings. Larger sizes are also available. Ask sizes are also available. Ask for an Amsco pump engineer to discuss your requirements. Or write for Bulletin 1052P, containing full information and specifications on the Amsco line.



MSCO American Manganese Steel Division Chicago Heights, Illinois

Here's a combination that makes those overpass and bridge jobs smooth and fast. Two Northwests working together give you the accuracy and flexibility that takes out all the waste motion characteristic of less adaptable equipment.

Here, on a Michigan expressway a Model 41 handles and holds the cross members on their bearings while the big 95 smoothly sets the longitudinal members.

the longitudinal members.

On a job like this you have the smooth booming that comes with the Northwest Independent High-Speed Boom Hoist, independent in operation of all other machine functions and power controlled both up and down. You have the Northwest 3rd Drum that gives you an extra load line. You have the "Feather-Touch" Clutch Control that gives you the true feel of the load—a simple mechanical device free from the complications that come with pumps, compressors, valves and other delicate mechanisms. You have Uniform Pressure Swing Clutches with the velvet action that takes the jerks and grabs out of swinging, bringing greater accuracy to spotting loads, a particular advantage with high booms.

Greater mobility, visibility and many other advantages contribute to this better team performance.

Don't conclude that you know all about a Northwest. There is much in advanced design that we cannot tell you of in our advertising. Take your crane problem up with a Northwest Man. He can bring you up to date and often be a real help.

NORTHWEST ENGINEERING COMPANY 1503 Field Bldg., 135 South LaSalle Street, Chicago 3, Illinois

## MAKING THOSE CRANE JOBS GO!

# Ask about the 25-D 18-ton Lifting Crane

Here's a still finer workhorse in the 34-yd. class—the 25-D with a combination of advantages found in no other machine of this capacity.

Available also as standard shovel, crane, dragline and pullshovel. Don't buy a '4-yd. rig without getting the full story of this most modern of '4-yd.

machines.

# NORTHWEST always (50)

95-1-LCG-R

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SMOVELS % Yd. to 2½ Ya Copacity CRANES 13-Ton to 50-Ten Capacity DRAGUNES % Yd. to 3 Yd Capacity PULLSHOVELS 1/4 Yd. to 23/5 Yd. Canacity TRUCK CRANES 25-Ton and 35-Tor Campailty Allis-Chalmers announces a <u>new</u> motor grader in the 80-hp class

the

# ONE FORTY FIVE

80-hp Allis-Chalmers engine 21,540 lb

... Another outstanding motor grader joins the Allis-Chalmers line the ONE FORTY FIVE



MODEL D
58-hp Allis-Chalmers engine
8 800 to 11.450 lb

ONE FORTY FIVE 80 hp Allis Chalmers engine 21,540 lb FORTY FIVE 120-hp Allis-Chalmers engine 23,800 lb

move ahead with ALLIS-CHALMERS

Page 8 — CONSTRUCTION METHODS and Equipment — March 1959

#### BEST BUY IN THE MEDIUM-POWER FIELD

- Heavy-duty throughout at a moneysaving price.
- Designed and built for long, hard service on any construction or maintenance assignment.
- Retains the widely-accepted characteristics and performance features of the 120-hp Allis-Chalmers FORTY FIVE grader.
- Offers the best combination of operator features of any grader near its size.



Operator advantages no other medium-priced grader can give you... "wide-open" visibility... over-the-circle lift cases... suspended pedals and exclusive no-kick, toggle-type controls.

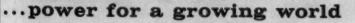
Power for high production. Husky, high-torque Allis-Chalmers diesel engine handles overloads without shifting down...geared for good range of travel and working speeds.

Load-handling ability second to none. The new ONE FORTY FIVE has a 26%-inch-high arched

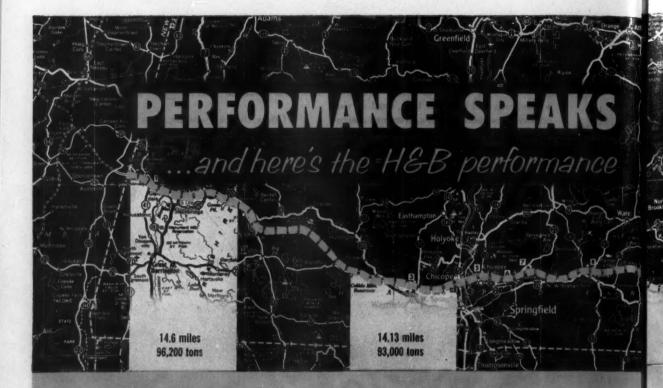
front axle—and highest throat clearance in its class. You get more dirt to the ROLL-AWAY moldboard and move it with efficient rolling action that uses less power.

See the new ONE FORTY FIVE motor grader at your Allis-Chalmers dealer's. Check its dollar-saving price. Then check its 80 hp and 21,540 lb on an actual demonstration. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wis.

IDLL-AWAY is an Allia-Chairners trademark.







### 6 H&B plants produced 43% of mix (for 52.24 miles) while 13 other makes of plants produced 57% (for 69.68 miles)

The Massachusetts Turnpike has been called the most ambitious single road surfacing project in New England history. Despite many delays to prime contractors, a high degree of cooperation between the engineers, the contractors and the Massachusetts Turnpike Authority made possible completion of the job approximately on schedule.

Ten topnotch contractors shared this 122 mile job, which required 1,800,000 tons of broken stone and 1,022,000 tons of bituminous concrete. Of the total blacktop production, the six Hetherington & Berner Type "T" plants which participated in the job produced 437,200 tons of mix, or enough to pave 52.24 miles of the turnpike. The thirteen other plants which participated on the job produced 584,800 tons, or

enough to pave 69.68 miles.

Shown at the right are two of the six H & B plants that had a part in the job. The performance record of these six plants on this job was not at all unusual for H & B asphalt plants. Throughout the United States, Canada, Mexico, Central and South America, Europe, Africa and the Middle East, H & B asphalt plants have been doing the same thing for well over a half century—cutting the costs and speeding the jobs on paving projects of all kinds and sizes—large and small. Below are shown other types of H & B asphalt equipment which have equally enviable performance records to their credit.

For complete information on any of these plants see

For complete information on any of these plants see your nearest H & B distributor or write direct.

HETHERINGTON & BERNER INC. • 701-745 Kentucky Avenue • Indianapolis 7, Indiana America's First Builders of Asphalt Mixing Equipment

Export Department: 205 West Wecker Drive, Chicage 6, Illinois, Cable Address: "PANMAKINA"



At right: The H&B Moto-Paver is a combin tion mixer-paver, in one self contained, self-propelled unit—does the complete mixing and paving job in one continuous operation, less sand, gravel, stone or stag aggregates and most types of emulsions, cut-backs, and oils and tars with equal efficiency. Mixing capacity on resurfacing work 100 to 120 tons per hour.



## LOUDER THAN CLAIMS

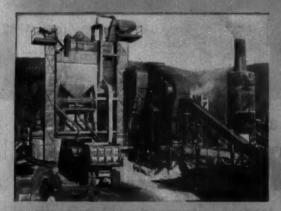
record on the Massachusetts turnpike

oston

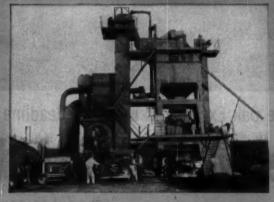
14.93 miles 136.000 tons

8.58 miles 112,000 tons





Above is the 3 ton Hetherington & Berner asphalt plant used by B. Perini & Sons to supply the 96,000 tons of bituminous concrete required for their Western section of the Massachusetts Turnpike.



Above is the Hetherington & Berner T-60 plant of Nello L. Teer Co., which furnished the bituminous concrete for their own part of the job, also for the two Clark-Farrell jobs.

At right: H&B Mobile (completely wheel mounted) batch type plants, require no crane for crection or dismantling. All piping and wiring permanently installed, with quick discennects. Dismantling, moving, and erection on another site is a matter of a few hours instead of days. Capacity ranges: Mobile 20—40 to 60 tons; Mobile 40—120 to 140 tens; Mobile 60—160 to 225 tons per hour.





White Oak Excavators meet the deadline at Hogback Dam:

# **Texaco Plan lets White Oak lube**



THESE SIX TEXACO LUBRICANTS, shown here with White Oak Excavators' Vice President, John Toffolon, and H. F. Perter, Texaco representative, permit their rig to lubricate all major equipment.

#### Contractor reports Texaco Simplified

RIVERTON, CONN.—White Oak Excavators, contractors for Connecticut's Hogback reservoir dam, have found that the Texaco Simplified Lubrication Plan makes their truck-mounted lube rig more useful than ever before.

"The Texaco Plan is really essential to getting the best use of our lube rig," says John Toffolon, one of White Oak Excavators owners. "Our Texaco Plan calls for just six lubricants to handle everything on the spread. We can take our whole lubricant inventory right out into the field. That's especially important to us because we use equipment made by practically every manufacturer."

Using no more than six lubricants on this \$4,225,000 project has other advantages, too. For example, smaller inventory (six lubricants instead of 15 or 20) means less



# rig handle all field lubrication

Lubrication Plan "essential to best use of lube rig"

handling, less storage space, less chance for misapplication. And, of course, the Texaco Simplified Lubrication Plan developed for the Hogback project comprises lubricants specifically chosen to meet the requirements of that particular job.

Here are the six lubricants, shown at the left with Mr. Toffolon: (1) For engines: Texaco Ursa Oil Heavy Duty; (2) for chassis, wheel bearing and general grease lubrication: Texaco Marfak Multi-Purpose 2; (3) for hydraulic units: Texaco Regal Oil R & O; (4) for transmissions and differentials: Texaco Meropa Lubricant; (5) for wire rope and open gears: Texaco Crater; (6) for

track rolls: Texaco Track Roll Lubricant.

You'll save time and money by letting a Texaco Lubrication Engineer work out a Simplified Lubrication Plan tailored to the specific requirements of your project. Just

call the nearest of the more than 2,000 Texaco Distributing Plants, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

# Easier Placeability... Earlier Stripping of Forms... Better Finishing...with

In the construction of this large, modern suburban department store, again were demonstrated the improved quality and cost benefits obtained with Pozzolith.

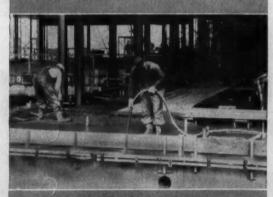
Besides economically providing easier placeability and better finishing, Pozzolith was an aid in obtaining high early strengths, which permitted earlier stripping of forms to speed completion of the project.

Call in any one of our more than 100 full-time field technical men to discuss these and other benefits of Pozzolith for your project.

\*Pozzolith...registered trademark of The Master Builders Company for its water-reducing, air-entraining admixture for concrete.



POZZOLITH\*



"May's-on-the-Heights"—Suburban
Department Store, Cleveland, Ohio
Architect: Victor Gruen Associates,
Detroit, Michigan
Associate Architect: Jack Alan Bialosky,
Cleveland
General Contractor: Sam W. Emerson
Company, Cleveland



THE MASTER BUILDERS COMPANY

DIVISION OF AMERICAN-MARIETTA CO.

General Offices: Cleveland 3, Ohio • Toronto 9, Ontario • Export: New York 17, N. Y.

Branch Offices In All Principal Cities • Cable: Mastmethod, N. Y.

## Construction News From Washington

Washington, D.C. March, 1959

#### Highway Awards Shoot for New Record

Contract awards by state highway departments topped \$4 billion for the first time in 1958. The awards total hit \$4.055 billion, up \$700 million from the 1957 figure of \$3.355 billion.

This year, contractors can look for a comparable rise. On the basis of expenditure estimates by the Bureau of Public Roads, it is fair to say that bidders will compete during 1959 for some \$4.9 billion of state highway contracts.

Decision of Democratic leaders to kill Pres. Eisenhower's proposed 1½ cent increase in the federal gasoline tax won't slow down the rate of awards; in fact, it may have just the opposite effect. A dozen or more of the states face the necessity of augmenting their highway funds. With the threat of higher federal gasoline taxes removed, these states will be better able to tap that source of revenue for their own needs. The result may be a continued push by the states to accelerate their road construction programs, both federal-aid and non-federal-aid.

#### **Congress Studies River Development Policy**

Congress is at work on water policy legislation that would greatly broaden federal activity in construction of river projects for reclamation, flood control, navigation, power, water supply, and recreation.

During the last two years, the Senate has adopted regulations requiring federal departments to evaluate and prepare estimates, of benefits and payout possibilities for proposed projects on a broader basis than heretofore, projecting a useful life of up to 100 years.

This year, the House Interior Committee is working on a declaration of national policy with respect to water projects and basin-wide development of river systems. There is a good possibility that the present Congress may pass such legislation this year or next. If enacted, a law of this kind will open up a new era of federal development of river basins.

#### **Buying Foreign Materials**

The Bureau of Public Roads is caught in the middle of a fight over importation of foreign materials—mainly cement and structural steel—for the federal highway building program.

On one side are officials of the State Department and other agencies concerned with foreign economic policy. They argue that the

U.S. must maintain a liberal trade policy to enable allied nations to earn dollars. Otherwise, they say, these nations will be forced to rely on U.S. foreign aid handouts.

On the other side are U.S. materials producers. Structural steel suppliers, in particular, are disturbed at the prospect of increasing importation of foreign steel. Partly, it's because the steel industry faces what may be a prolonged strike at mid-year. But partly, too, it's because steel men realize that foreign producers—Japanese, Belgian, British, and German—already can compete on a price basis in nearly every state.

The stakes are big. About \$800 million a year of cement and steel will go into the highway building program for each of the next several years. And much of it will be paid for with federal tax dollars, even though the actual contracts and checks are signed by state highway departments.

At present, about a dozen states have laws or procurement regulations that forbid contractors to use imported materials on highway jobs. Some of these regulations are of long standing. There was not much fuss about them until recently. But now, with the federal government paying 90% of the cost of building the 40,000-mile interstate network, a federal ruling obviously could knock out the "Buy American" policies of these states.

As yet there has been no decision in Washington. But there are hints that Secretary of Commerce Strauss leans toward a policy of allowing each state to set its own rules. That, of course, would open the door for more states to ban the importation of foreign materials.

#### **New Military Contracts**

Congress is all set to approve in this session \$1.4 billion of military construction projects that will go to contract in the next 15 months. The new projects requested by the armed forces add up to nearly \$875 million for the Air Force, more than \$230 million for the Army, \$195 million for the Navy, and \$57 million for National Guard and reserve components.

More than \$1 billion of the total will be spent in the U.S., \$275 million will go overseas, and another \$53 million is for work at sites still to be selected.

Half the money goes to projects at locations the Defense Department named, but nearly \$700 million is allotted for construction at sites that are classified or for other reasons cannot be revealed. Work at named sites will generate about \$700 million of contracts within the next 15 months. Of these jobs, 39 will call for bids on more than \$3 million of work.

Four of the jobs in the U.S. will be in the \$20-\$30 million range—two at Navy installations in California, the Air Station at Lemoore and the missile range at Point Mugu; and two at Air Force bases, Andrews AFB at Camp Springs, Md., and Richard Bong AFB at Kansasville, Wis.

Rocky Road Ahead?

# You can do more for less

on Tru-Seal Tubeless Rims

You couldn't pick a tougher test than working into and hauling jagged, newly blasted rock. On jobs like this, you'll get lower cost-per-ton when your tires are mounted on Tru-Seal Tubeless Rims by Goodyear.

Tru-Seal is the only practical way to seal a multiplepiece rim. In fact, it has been adopted by the Tire and Rim Industry for tubeless replacement of all conventional tire sizes 12:00 and larger.

Like all Goodyear Rims, Tru-Seal offers these additional advantages:

Unusual Strength: Thanks to an exclusive doublewelding process, and added support at points of greatest stress, present-day Goodyear Rims are far stronger than previous rims.

Ease of Tire Mounting: No tube and flap troubles.

Special Tools: Goodyear provides both hydraulic and hand tools especially made for off-the-road equipment.

Bond-a-Coat Finish: Only Goodyear Rims have this protective coating which affords long-lasting resistance to rust and corrosion.

If you have a rim problem, talk it over with the G.R.E. your local Goodyear Rim Distributor.



GOOD

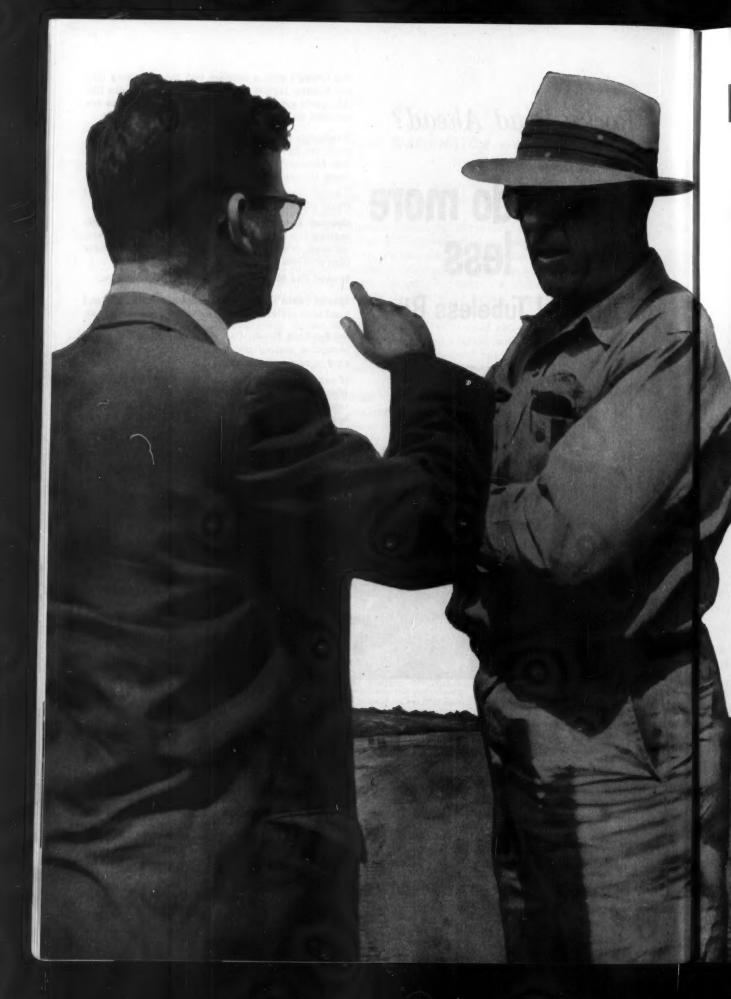
More tons are carried on Goodyear Rims than on any other kind

METAL PRODUCTS DIVISION

Tru-Seal -T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

Watch "Goodyear Theater" on TV-every other Monday, 9:30 P.M.,

March 1959 - CONSTRUCTION METHODS and Equipment - Page 17



## HOW Standard Oil serves S.J. Groves on Bong Air Force Base job



P. S. Cauchy, master mechanic (center) and Standard men Jim Sreenan and Fred Schmalteldt (left and right) sattle details on fuel deliveries.

Contractor moves up to 130,000 cubic yards of dirt in day...Standard Oil provides 'round the clock delivery of fuels and lubricants.

Situation: S. J. Groves is building 11,500 ft. runway and taxi strips at Bong Air Force Base, Kansasville, Wisconsin. Men under A. J. McKay, Groves' project manager, are moving 14 million yards of dirt, putting down a million tons of gravel base and pouring 222,000 cubic yards of concrete.

What was done: When Standard Oil received the order from Groves, two lubrication specialists—Jim Sreenan and Mike Harpham—from Standard Oil's Milwaukee offices went into action. They surveyed the fuel and lubrication needs of the 140 pieces of equipment on the job. They specified the Standard Oil products that would (1) do the job without requiring multiple inventories, (2) reduce the chances of misapplication. Then these men arranged for storage of fuel and lubricants

on the site and set up a delivery program with the Standard Oil agent located at Silver Lake, just six miles from the construction job.

Standard Oil agent, Fred Schmalfeldt, and his crews make deliveries to the job between 5:30 and 7:00 each morning and night. In addition, Groves' Euclid dirt loader is serviced by them at noon and midnight. Plus this, a standby truck is stationed at the base throughout the night.

What you can do: This is Standard Oil service to contractors. To get this kind of service on your job, all you have to do is call your nearby Standard Oil office anywhere in the 15 Midwest and Rocky Mountain states. Or write Standard Oil Company (Indiana), 910 So. Michigan Ave., Chicago 80, III.



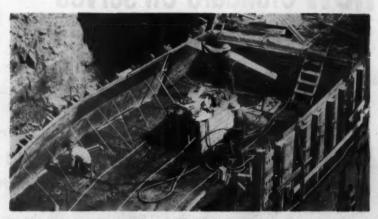
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Compressed Air is Used!



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### Job Talk ...



#### **Tubing in Dam Cools Concrete**

Aluminum tubing circulates water to cool hardening concrete at the Williams Fork Dam near Parshall, Colo.

Mountain States Construction Co. install the 1-in. tubing on the top surface of each 5-ft concrete lift. Two workmen unwind the tubing from 275-ft coils and lay it out over the 50-ft-long sections.

The men find the aluminum tubing easy to work with. The

coils unwind easily by hand, and no mechanical benders are needed to form the curved turnarounds at the ends of the section. The only couplings in the tubing are at each end, where fittings project from the concrete to receive and discharge water.

The contractor will use approximately 33,000 ft of the tubing, supplied by Aluminum Company of America, on the job.



#### Job-Built Rig Handles Pipe

A home-made rig mounted on a standard truck chassis substantially reduces time required to unload pipe sections from flat cars. Dunn Brothers Trucking Co., a Texas firm, built the entire rig out of material from their yard.

Three sections of 4-in. pipe combine to form a boom that pivots about a bar welded to the back of the truck frame. Two 4-in. pipes telescope together to form a backstay for the boom. Matching holes in the telescoping sections permit locking the boom at a fixed angle if desired. A spring coiled around the lower section of the backstay provides a cushion against whipping action

continued on page 26

MANIFOLDS

"with a BAY CITY
I can control it right
...and right now!"

SIMPLE, TROUBLE-FREE AND INSTANTANEOUS CONTROLS MEAN FASTER OPERATION... PEAK PRODUCTION



PERFORMANCE PROVED

# BAY CITY

THE WORLD'S BEST BUILT SHOVELS AND CRANES... NOW AVAILABLE WITH THE NEW BAY CITY LOW RATE FINANCING PLAN BAY CITY SHOVELS INC., BAY CITY, MICHIGAN, U.S.A.

March 1959 - CONSTRUCTION METHODS and Equipment - Page 21



GALION

HUBER-WARCO



Series L6N-L6S Needle bearings or sleeve bushings. For moderate pto hp or steering jobs.



Series K With sleeve bushings. For hand controls and pto service.



# These grader builders offer steering smoothness—plus ROCKWELL-STANDARD QUALITY with BLOOD BROTHERS Universal Steering Joints

Certainly, graders get their share of steering shocks and strains. And the engineers who design them expect it.

That's why grader builders so often furnish Blood Brothers Universal Steering Joints. From start to finish, they're soundly designed and ruggedly built to stand punishment.

Contractors can appreciate their steering smoothness and freedom from trouble. Design Engineers

can depend on Rockwell-Standard's high level of quality—and friendly cooperation in solving special problems.

If you're not already using Blood Brothers Joints, just write or call. Our engineers will gladly work with you.

For general information, write for Bulletin 557.

**ROCKWELL-STANDARD CORPORATION** 



**Blood Brothers Universal Joints** 

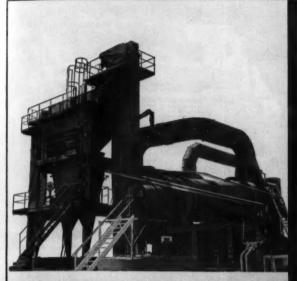
ALLEGAN, MICHIGAN

UNIVERSAL JOINTS AND DRIVE LINE ASSEMBLIES

©1959, Rockwell-Standard Corp.



### **BUILDS THE ASPHALT PLANT** TO FIT YOUR NEEDS!





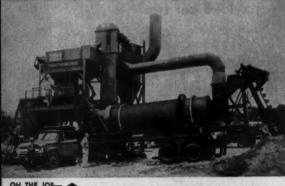
R-M Series

MANUFACTURED IN 2000, 3000, 4000, 5000, 6000, 7000 AND 8000 POUND BATCH CAPACITIES.

Engineered to give fast, efficient, dependable service, the Standard Model R-M Asphalt Plant is BIG—with the Super-lift Dryer, Standard-Symons horizontal vibrating screen, type "S" Hi-Speed Mixer and oversized power units. These are some of the important Standard features which eliminate the usual production bottlenecks.

RUGGED-with built-in stability through the use of heavy pressed steel members, generously sized transmission and bearings, and job-designed wear-resistant alloy metals.

SIMPLE-to operate-no gadgets-clean dust seals at all points. Economical - low erection, operating and maintenance cost assures more profit year in, year out!



THE JOB ON THE WAY-

COMPLETELY PORTABLE

MANUFACTURED IN 1000, 1500 AND 2000 POUND BATCH CAPACITIES.

Standard Model T-M Asphalt Plant -BIGGEST BATCH TYPE ASPHALT PLANT ON WHEELS - the proven answer to low-tonnage hot-mix jobs at remote locations.

Big! Fast! Rugged!... Operators report capacities up to 60-80 tons of hot mix per hour.

Completely self-contained on its own trailer, field proven everywhere for its ability to stand up under the most rigorous conditions. Self-erects from transport position to operating position in less than 60 minutes.

Entire plant can be set up and producing in less than eight hours.

#### STANDARD STEEL CORPORATION

Midwest Offices & Plant LEADER IRON WORKS Decator 89, Ellinois

ASPHALT PLANTS

built to do a better job!

PARTS WAREHOUSES IN LOS ANGELES AND DECATUR, ILLINOIS =

ALSO

#### THE NEW "STANDARD" SUBGRADER

Write for information about STANDARD's new DEEP-CUT Subgrader. Takes cuts as deep as 26 inches. Ideal for airport work.

ROTARY DRYERS . KILNS . COOLERS . ASPHALT PLANTS

### Heavy Construction Operators

# Go FORD-WARD for greater payload... power.

#### "Our Ford trucks haul up to a ton-and-a-half more payload per trip"

says William R. Collins, V.P. William Collins and Sons, Fargo, N.D.

"We switched to Ford trucks in 1951 because we found we could haul 1½ tons more per trip. Now we have 124 Fords, including 80 T-700's. They're economical to operate, too—we get up to 6 miles per gallon. Our drivers like Ford's power steering and peppy 302 HD V-8 engine. We like Fords because we know we can always get Ford parts quickly if we need them. That means our trucks aren't down over one day, even on a major overhaul."

#### "We trade every two years and find that Ford trucks bring highest resale price"

says John McCormick, Sec.-Treas. NorthernImprovementCo.,Fargo,N.D.

"We keep our Ford T-700's in top condition year round, and it pays off. We get a higher resale price when we trade every two years. Fords have the ability to perform under the rugged conditions in our work. Power steering on our tandem dumps makes them easy to handle on-or off-the road.

## "Our drivers like Ford's power... they get heavy loads under way fast"

says George C. Wilson, General Superintendent Schultz and Lindsay Construction Co., Fargo, N. D.

"Ford's HD power in our T-750's gets heavy loads under way fast...helps keep us on schedule. And we can haul bigger payloads doing it... up to a yard more, legally, every trip. We've never had frame trouble either. They're rugged, durable trucks and if we ever need Ford parts, we can always get them at the nearest town."

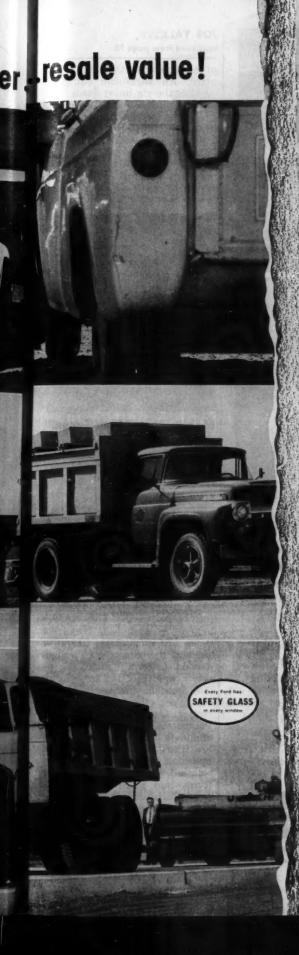
## FORD TRUCKS COST LESS

LESS TO OWN...LESS TO RUN...LAST LONGER, TOO!









NOW!
CERTIFIED PROOF
FORD TRUCKS
COST LESS

All tests
conducted and results
CERTIFIED
by America's foremost
independent automotive
research organization\*
\*NAME AVAILABLE ON REQUEST
Sand inquiry to: P.O. Bax 2687
Ford Division, Ford Motor Ca.
Detroit 31, Michigan

# **`59 Ford Pickups Win Economy Showdown U.S.A.**

# -average 25.2% better gas mileage!

Impartial tests of the 1959 pickup models of all six makes prove conclusively that Ford's 4-ton pickups equipped with Short Stroke Sixes are the economy champs for '59.

#### HOW TESTS WERE MADE

Standard six-cylinder models of the six leading half-ton pickups first were put through exhaustive road trials. All '59 trucks—Ford and competitive—were bought from dealers, just as you would buy them. After at least 600 miles break-in, all were brought up to manufacturer's recommended specifications.

The trucks were then tested — by America's leading independent automotive testing firm—at constant speeds of 30, 45 and 60 miles an hour. Next came stop-and-go tests, ranging from moderate city traffic to normal retail delivery operation. Acceleration rates were carefully timed in each gear to insure accurate results for all makes.

į	HOW NEW '59 SIXES RATE IN GAS MILEAGE									
STREET, SOUTH PROPERTY.	State of the last	25.2% more miles per gallon filan Make **C**		STATE OF THE PARTY	CONTRACTOR OF THE PARTY OF THE					

The '59 Ford Sixes, in every test, averaged more miles per gallon than every other make! Combining all tests, the '59 Fords led the average of all other '59 pickups by 25.2%.

#### WHAT'S THE SECRET?

How can a '59 Ford Six make four gallons do the work of five in other trucks?

First, of all pickup Sixes, only Ford has modern Short Stroke design. This new type of engine is basically far more efficient than long-stroke Sixes of other pickups. Example: Ford's Six delivers more usable horsepower than any other pickup Six.

Second, to this modern engine Ford has added a new economy carburetor. By metering fuel more precisely in both low-and high-speed ranges, Ford's new carburetor boosts gasoline mileage in every type of driving. And Ford's Economy Carburetor is standard at no extra cost.

Your Ford Dealer now has the complete report of Economy Showdown U.S.A. Why not call or visit him today and get the whole story firsthand?

#### **GOOD RULE TO FOLLOW**

WHEN BUYING

ANY SPECIALIZED MACHINE:

CHOOSE A MAKE WHOSE BUILDER THINKS
ENOUGH OF HIS OWN GOOD NAME TO
EQUIP HIS PRODUCT WITH



Photo Courtesy Ingersoll-Rand.

All through the construction industry, you find Continental Red Seal engines building prestige for specific makes of equipment. Within the range of industrial engines alone—15 to 260 horsepower—it would be hard to name a type of enginedriven product—compressor, mixer, pump, earth mover—of which one or more of the leading makes do not rely today on Continental power. Every Continental Red Seal is not only built for the job, but backed by parts and service facilities from coast to coast.

ANY EQUIPMENT IS BETTER EQUIPMENT WITH DEPENDABLE RED SEAL POWER

8 EAST 45TH ST., NEW YORK 17, NEW YORK - 3817 S. SANTA FE AVE., LOS ANGELES SA, CALIF. 8218 CEDAR SPRINGS ROAD, DALLAS 8, TEXAS - 1232 GAKLEIGH DR., EAST POINT (ATLANTA) GA. ET. THOMASE ONTABLO

Continental Motors Corporation

MUSKEGON . MICHIGAN

JOB TALK...

of the boom when the pin is not in place. An adjustable outrigger steadies the rig heavy loads.

Two winches power the rig. One winch mounted on a head-ache frame behind the cab powers the boom. The other, placed just below the boom winch, powers the hoist line that raises and lowers the pipe. Both winches are driven by a power take-off from the drive shaft of the truck.



#### **Mobile Forms Line Tunnel**

Cla

Two 60-ft-long non-telescopic tunnel forms are proving to be easy to handle for Merritt-Chapman & Scott Corp. on the \$108-million Glen Canyon Dam project in Arizona.

The Blaw-Knox steel forms are helping line 6,000 ft of diversionary and spillway tunnels on the project. The 33-in.-thick lining requires 20 yd of concrete per lin ft. The tunnels will take 140,000 yd of concrete.

Preassembled outside the tunnel, the forms are mounted on rails secured to the previously poured tunnel invert. When the forms are in position, hydraulic jacks at the base of each section expand the form to match the inside diameter of the tunnel.

A wooden bulkhead holds the concrete at the front end of the section. Concrete is placed with a Pumpcrete machine, vibrated to eliminate honey-comb, and allowed to set for 16 to 24 hr. Then hydraulic pressure on the jacks is released, and the crew moves the forms into place for the next pour. Collapsing, moving, and resetting the forms takes only 12 hr.

The specially designed forms permit lining curved sections with a radius of 165 ft, and they also can be used for inclined sections.



## Clam-action 4-In-1 "takes over" where straight buckets falter!





"Carry-type scraper" action gives inch-close grading accuracy, lets the earth "boil" into the bucket for convenient loading and fast disposal. You can't compare erratic old-style straight-bucket loader performance to depth-controlled work like this! And you can also use 4-in-1 "carry-type scraper" action to strip and spread materials with inch-close accuracy!

See how versatile 4-in-1 clamshell action takes over on job after job where single-action, old-style straight bucket or limited duty rigs can't possibly compete! Try the 4-in-1 as excavator-loader and as earth-rolling bulldozer. Prove to yourself that only a clam-action 4-in-1 gives you job opportunities, unlimited. See your International Drott Distributor for a demonstration.

Use easily controlled clam action to fill the 4-in-1 with elusive loose materials (like this crushed stone) —in one fast gulp! Many owners use this speedy load-in-place clamshell action for close-quarters loading. Also, for positive clean-up on building projects, to practically eliminate need for hand-shovel labor!



International Harvester Company, Chicago 1, Illinois Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL.

DROTT



These Job "Supers" and Operators with comparison proof can tell you:

# Planet-steered "24's" lick conditions too tough for clutch-steered crawlers



Ethan Smith, Superintendent for W. S. Fowler Construction Co., Oneonta, Alabama, reporting: Geor

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"My 20 years as operator, dirt foreman, and superintendent tell me International TD-24 dozers are really something for pioneering-especially in sidehill cuts through shot rock. Planet Power steering keeps the loaded blade in the sidehill without rear end slippage. And when we use the Torque-Converter TD-24 for pushing, it heaps the bowl full fast by crowding the push block, even through shot rock." The job: Working on a 3-mile section of new U. S. Interstate 31, in Blount County, Alabama—with 1,100,000 cu. yd. to move, including 350,000 of rock!

#### Don Doyle, TD-24 operator for Funderburk, Anderson & Stone, Sutherlin, Oregon, speaking:

"We are completing a tough rock road here where another machine (20-ton track-type machine of different make) tried and failed. The Torque-Converter and especially the TD-24 (planetary) steering system made this possible. We can side-cast and move out rocks other equipment can't possibly move." Contractor is building 17 miles of Forest Service access road into primitive mountain country—using two International TD-24 Torque-Converter crawlers for the pioneering and other dozer work.



### States Edward A. Schultz, operator for John Schultz Contracting Co.,

Westbury, Long Island, New York: "The TD-24 Torque-Converter is easy to operate and also easy on equipment being push-loaded. It outworks any equal-sized tractor I have ever operated." Picture shows the Schultz TD-24 bulldozing large boulders from acreage being developed for a subdivision.



#### Superintendent Roy Allen, for George Grimmert, El Paso, Texas,

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000 ock! says: "Our International equipment forms the backbone of our construction machinery fleet. The TD-24 Torque-Converter pusher is excellent, heaping on loads in 30 to 45 seconds whether the push is straight or curving. The 'live' track, power steering puts TD-24 performance in a class of its own." The contractor is providing 100,000 cu. yd. of fill dirt for a 490-home project in Fort Bliss, Texas.

See how your operators can give you new toughjob efficiency—can hand you paydirt dozing dividends of up to 50%—on Planet Power-steered International TD-24 crawlers. Prove what it means on benching, bank-cutting, or side-casting to command full-time "live" power on both tracks. Measure the advantages of Planet Power steering when dozing, pushing and pulling—eliminate "dead-track drag" on the turns—have instant, on-the-go Hi-Lo power-shifting! Call your International Construction Equipment Distributor for a demonstration!

## International<sup>e</sup>

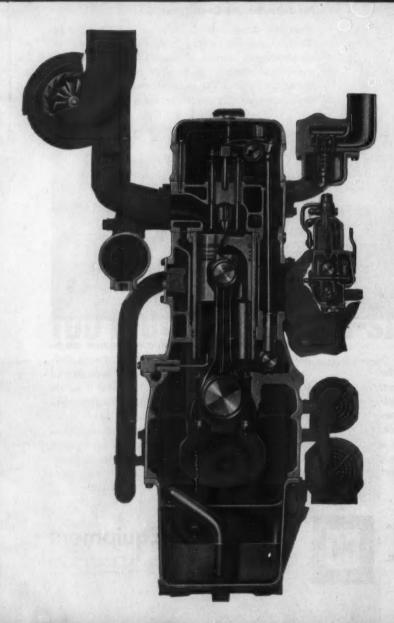
180 N. Michigan Ave., Chicago 1, III.



### **Construction Equipment**

A COMPLETE POWER PACKAGE Crawler and Wheel Tractors...Self-Propelled Scrapers and Bottom-Dump Wagons...Crawler and Rubber-Tired Loaders...Off-Highway Haulers...Dissel and Carbureted Engines...Motor Tracks...Erre Tractors, and Equipment NOW FOR THE FURST TIME

INTERNATIONAL UDI



Here's the all-new direct start 385 max. hp International UDT-817-a compact, heavy-duty 4-cycle, 6-cylinder engine thoroughly proven in six years of development and testing-backed by 26 years of experience in manufacturing and selling over 400,000 heavy-duty diesel engines.

Designed for versatile application in a wide variety of rugged construction applications, the UDT-817 answers the demand for dependable high power and lower cost operation on crushers, shovels, generator sets, hot mix plants, and for repowering on-or-off-highway earth moving equipment.

A wide variety of accessory equipment including air cleaners, flywheels for leading makes of torque converters and clutches, torque converter cooler, air control compressors, safety shut-offs, instruments and engine controls can be furnished to meet your installation requirements. Base, radiator, hood and dash, clutch and power take-off are available for complete power units.

For more specific information or application assistance, merely call your nearby International Power Unit Distributor or Dealer.

#### BRIEF SPECIFICATIONS

DRILL SPECIFICATIONS	
Type4-cycle turbocharg	ed
Bore and Stroke	6"
Number of Cylinders	.6
Displacement	in.
Max hp	pm
Rated hp	pet
Max. Torque	pm
Compression Ratio1	5:1
Weight	lb.
Lbs. per max. hp	7.2
Length, fan to flywheel	4"
Height	12"
Width39	15"
Flowbael housing SAF No.	

hp.

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#### FEATURES THAT ADD DEPENDABLE, ECONOMICAL POWER

- Fast direct starts with 24-volt electrical system.
- Direct injection of fuel under pressures to 20,000 psi by individual camshaft actuated multi-orifice injectors.
- Exclusive IH twin plunger metering pump directs equal and precise amounts of fuel to each injector in proper firing order according to load and speed demands.
- Turbocharger puts waste energy in exhaust gases to work for higher power output and lower fuel consumption.

- Dual intake and exhaust valves for free breathing efficiency.
- Positive valve rotators keep valve seats free of deposits.
- Aluminum alloy pistons working in replaceable wet cylinder sleeves with velocity swirl flow water cooling on outside, jet oil cooling on inside, for long life operating temperatures.
- Fully counterbalanced Tocco-hardened crankshaft with seven big main bearings and torsional vibration damper for smooth, dependable high power output.



#### International® Construction Equipment

International Harvester Co., 180 North Michigan Ave., Chicago 1, III.

A COMPLETS POWER PACKAGEs Crawler and Wheel Tractors ... Self-Propelled Scrapers and Bottom-Dump Wagans ... Crawler and Rubber-Tired Leaders ... Off-Highway Haulers ... Diesel and Carbureted Engines ... Motor Trucks ... Farm Tractors and Equipment,



## WHY JAEGER PUMPS GIVE YOU THIS OVERSIZE PERFORMANCE

All contractors pumps are not "created equal." In a Jaeger pump, the shell and impeller are built oversize, the engine is of the largest horsepower applicable, the seal is positively lubricated and priming is by two independent, simultaneous actions.

That's why you get (1) Doubly-sure fast priming, (2) High capacity at much slower operating speeds, (3)

Sustained efficiency and longest life from both the pump and engine. Buy your pumps on today's facts: Ask your Jaeger distributor or write us for latest information and performance data on Jaeger Sure Prime pumps—1½" to 10" self-priming centrifugals and 3"-4" diaphragm pumps for dewatering, 2" to 6" pressure pumps for jetting and other high head service.

SUMP SOLVES PROBLEM OF HEAVY IN-FLOW IN COFFERDAM 22' BELOW RIVER: This 54' x 41' riverside excavation is 22' below water level in granular soil. Every morning, a Jeeger 10" pump dewatered the cofferdam in about 1 ½ hours (a 350,-000 gallon job), and then pumped out the continuing heavy inflow gathered by a peripheral drainage ditch and sump so that a reinforced concrete foundation

could be poured "in the dry."



ABOVE: Discharge from the 10" pump.

LEFT: 10" pump drains sump; 6" pump is standby. Clamshell removes washed-in solids.



BIG CAPACITY IN 110 LB. PUMP: On this job of dewatering small bridge footers, 2" aluminum model pumps 9300 gph at 10' suction lift. Hardened replaceable liner plate, and stainless steel insert at point of greatest wear, insure long life.



3000 GPM AT 320' HEAD: Two Jaeger 6CPH pumps with Chrysler industrial engines supply gravel washing plant with 3000 gpm at terminal pressure of 115 psi. Reservoir is 40' below plant and 120' away. Discharge pressure at pumps is 140 psi; total head 320'. Smaller Jaeger 5CPH, delivering 750 gpm @ 115 psi, supplies the reservoir from a river located 115' lower and 4000' away.

#### THE JAEGER MACHINE COMPANY

800 Dublin Avenue, Columbus 16, Ohio

ROTARY AIR COMPRESSORS . CONCRETE MIXERS . TRUCK MIXERS . PAVING SPREADERS, FINISHERS

Building a Giant Water Line

> BETHLEHEM STEEL

Fabricated and Erected by Bethlehem Steel Company





It's 14 ft ID. And the spans you see here are 80 ft, center-to-center of the supporting ring girders. To the best of our knowledge it's the world's longest aboveground steel pipe line of such large size. And there's not an expansion joint in it!

Completed in late Summer, 1958, the line is owned by Pennsylvania Power & Light Company. In the mid-1920's PP&L dammed the waters of Wallenpaupack Creek near Hawley, in northeastern Pennsylvania,

In recent years, as shown here, the wood-stave line sprayed water from innumerable leaks. The steel saddles and tie rods, supplied by Bethlehem some thirty years ago, were still in relatively good shape.



and constructed a hydro-electric plant 3½ miles from the dam. To carry water from the dam to the surge tank, they built a 14-ft-8-in. OD (14-ft-ID) flow line. It was made of Douglas fir staves, reinforced with steel rods, and supported on riveted steel saddles 8 ft center-to-center.

Through the years the wood staves deteriorated to the point where maintenance was no longer economical or feasible. So PP&L, in consultation with Bethlehem engineers, decided to substitute welded steel pipe, replacing approximately one-half of the line in 1956, the remainder in 1958. Furthermore, to expedite the start of work on the first section, they utilized as much as possible of the old material. The concrete piers were re-used, as were the steel saddles (requiring that the outside diameter of the steel pipe be the same as the wood line—14 ft 8 in.).

Experience gained in building the first section showed that it would be advantageous to re-design the line, rather than again re-use the old saddles and in ord ancho (abou to a y

piers long 3½-1 relie cont

form fabr halv field fabr asse



In order to begin construction of the downstream half in 1956, the entire line was de-watered. Then a Bethlehem crew quickly installed this bulkhead section. Immediately the upper half of the line was re-filled, as the wood would have collapsed if allowed to dry out. In order to withstand the thrust of about 280 tons, the bulkhead was anchored by huge, gravel-filled cribs. The tie bars shown here (about 70 ft long, 1½-in. diam., made of alloy steel, heat-treated to a yield strength of 100,000 psi) were also supplied by Bethlehem.



In some locations there were overhead obstacles such as highway bridges and power lines. There the cans were pushed into place by a gasoline locomotive running on temporary tracks, or by a tractor.



Finishing the job. The last can, temporarily mounted on saddles, is lifted into place by an 80-ton-capacity crawler crane with an 80-ft boom. The can weighs 18 tons, and measures 38 ft - 6 in.

# your car through

piers. Of primary interest in the new design are the long spans between ring girder supports. The entire 3½-mi line has no expansion joints; rotating and self-relieving anchors compensate for expansion and contraction.

In a fabricating yard set up along the line, the "cans" were assembled and welded. Each consists of five formed ½-in. plates shipped from our Steelton, Pa. fabricating works. The ring girders were fabricated in halves at Steelton, and assembled and welded in the field. The various members for the anchors were also fabricated before shipment to the job site for field assembly and erection.

Welders at work. All welds were carefully inspected, and were also spot-radiographed.





BETHLEHEM MAKES MANY TYPES OF PIPE. For many years Bethlehem has been a leading supplier of welded, coal-tar-enameled steel pipe for water mains, up to the largest diameters that can be shipped. We manufacture oil and gas transmission pipe up to 42 in. OD, meeting all API specifications. We also produce smaller-diameter pipe by the butt-weld and electric resistance-weld processes, for all applications.

#### A Complete Line of Steel for Construction



	ONS DEPARTMENT I STEEL COMPANY I, PA.	C-3
Please send me t	pooklets or catalogs number	ır
Also send literatu	re available describing th	ese products:
	re available describing th	ese products:
Name	re available describing th	ese products:
Name		ese products:

A partial, alphabetical listing of Bethlehem products for construction:

Abrasion-resisting steel Bar mats and welded fabric Barbed wire Blast furnace slag and commercial stone Bridge floor Bridge rail Cables for suspension bridges Center strip and keyway Centering, solid steel over joists Culvert sheets, galvanized Curb facing Digging bars Drill steel, hollow and solid Dowels, hook-bolt Dowel units Fabricated steel bridges and buildings Fasteners of all types Fence and posts Form stakes Form wire Guard rail; beam and cable Hardware, timber bridge High-strength bolts Joists, open-web: series "S" and "L" Paving steels Piling; pipe, sheet, and H-piles Pipe, large-diameter welded Pipe piles Pipe; butt- and electric resistance-weld Plate Posts, steel fence Posts, steel guard rail Reinforcing bar accessories Reinforcing bars, plain and fabricated Rock bolts Roofing and siding, steel Structural steel shapes Tool steel Tunnel-liner plates Tunnel ribs Tunnel segments Wire rope and slings; strand Yieldable arches for tunnel roof support

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

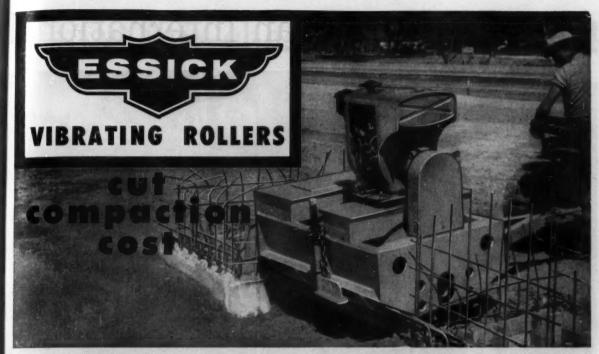
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation Expert distributor: Bethlehem Steel Export Corporation



BETHLEHEM STEEL

Folder 680

593, Printed in U.S.A.



#### FREDERICKSEN & KASLER

W. O. "Bill" Loy, Project Superintendent for Fredericksen & Kasler Construction Company on the Ventura (California) Freeway, states, "Our Essick Model VR-54T Vibrating Roller working on

#### CALIFORNIA

structural backfill in confined areas around bridge abutments met or exceeded all 95% density tests as required by California State Highway specifications."



#### S. J. GROVES - LAKEHURST NAVAL AIR STATION

S. J. Groves Company, using three Essick Vibrating Rollers, Model VR-54TEC, to compact runways at Lakehurst Naval Air Station job. These three rollers cover 13'2" on every trip and do the work of five single rollers. Versatility, easy handling, unequaled performance and low maintenance cost makes Essick VR-54T the most valuable compactor available.



#### MORRISON-KNUDSEN-BOISE AIRPORT

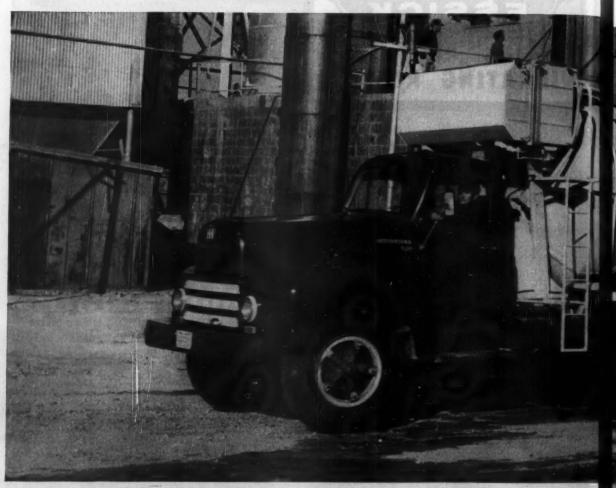
Morrison-Knudsen Company using two Model VR-54T Essick Vibrating Rollers, hooked in tandem and pulled by one light rubber-tired tractor, on the Boise, Idaho Airport Job. This tandem hookup equals the output of three single rollers, reducing tractor investments and speeding up work.

#### ESSICK MANUFACTURING CO.

AFFILIATED WITH T. L. SMITH CO., MILWAUKEE, WISCONSIN

1950 SANTA FE AVE., LOS ANGELES 21, CALIF. . 850 WOODRUFF LANE, ELIZABETH, NEW JERSEY

# There's an International



Light leads or heavy loads, this INTERNATIONAL model RF-190 six-wheeler has the versatility to take 'em and keep operating costs down doing it. There are optional front axles to 15,000 lbs., 13 different rear axle ratios with up to

34,000 lbs. of capacity—and a range of high-displacement six-cylinder engines up to 501 cu. in. A standard differential lock-out, heavy-duty suspension and optional power steering make this truck the "work horse" of any fleet!



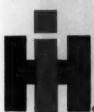
Save hundreds of dollars on first cost! Compact-design International. Truck slices bumper-to-back-of-cab dimension to 96 inches for maximum maneuverability...slices operating costs, too, with an economical 6-cylinder engine and matched drive-line that makes a perfectly balanced unit for the job. Select-O-Matic transmission options provide smooth application of power no matter what the conditions-eliminate shock-load to rear axle. Full depth channel-type frame and husky components back up GVW rating at 33,000 lbs.



Tough...there's no other word for it! This INTERNATIONAL Truck model RF-230 is built for keeps to keep big deliveries on the move. With its deep-flange, channel-lined, full depth frame and standard 15,000 lb. front axle — 50,000 lb. bogie, it "walks" 10-yard-plus loads over pock-marked terrain or hustles down the highway with no strain. What's more, you can get a 501 cu. in. displacement engine (444 pound-feet of engine torque) working through up to 190-to-1 overall gear reduction . . . steel-muscled power that "gets in, discharges and gets out" in a hurry!

# transit-mix chassis for every job!





When you buy an International Truck you're buying from the world's most complete truck line.

What can this mean to you? For one thing, savings . . . a model *custom-tailored* to handle any size mixer unit you need in your operation at no premium cost!

And savings don't end there. Standardiza-

tion on International Trucks assures a dependable pattern of performance, the availability of standard parts and fast, expert service — everything you need to keep your business moving at full efficiency.

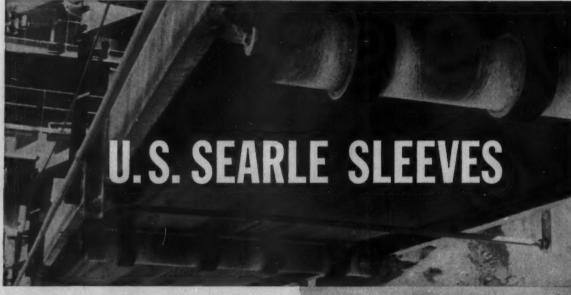
See your International Dealer for the facts and the figures. See if you don't agree . . . International is the truck that's "got it"!

International Harvester Company, Chicago - Moine Trucks - Crawler Tractors - Construction Equipment - McCormick® Form Equipment and Formall® Tractors

# INTERNATIONAL TRUCKS cost least to own!



# The patented proven way to prolong conveyor belt life!



One excavating contractor moved 4,000 tons an hour after mud build-up was about to close down conveyor system

The patented Searle Sleeves are made of abrasion-resistant cushion rubber reinforced by heavy belt duck. Installation is fast, just slip them over the idler rolls. At impact points, cementing is recommended.

Says a customer in California: "We started using U. S. Searle Sleeves as impact idlers at a transfer point, handling primary crushed rock. The Searle Sleeves protect the 4" conveyor rolls from impact abrasion. Replacement is not yet necessary. The Searle Sleeves appear to be wear-proof."

Mud and sand build-up is minimized or completely prevented on idlers equipped with U. S. Searle Sleeves. Return idlers remain clean. Absence of build-up means reduced edgewear, prevents abrasion of idlers and belts. Belt "wandering" is eliminated. Searle Sleeves also protect against impact at loading points.

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.



Close-up of U. S. Searle Sleeve. Available in large variety of sizes to fit conventional conveyor idlers,



**Mechanical Goods Division** 

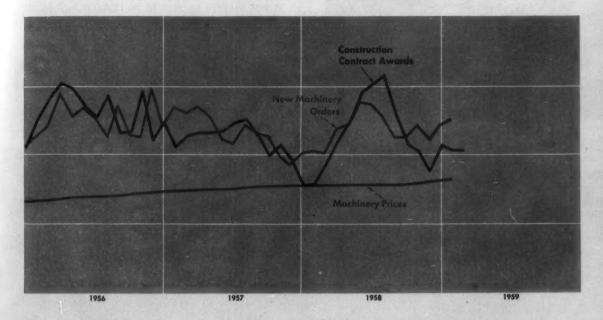
# United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y.

In Canada: Dominion Rubber Company, Ltd.

## Trends in the Machinery Market



#### **Price Index**

All Types of Equipment	JAN 1959 170.8	MONTH AGO 170.3*	YEAR AGO 165.4	CHANG 1958-19 +3.3
Cranes: Draglines, Shovels		188.3*	163.0	+3.3
Shovel 16 cu wd	186.2	156.2	153.7	+1.6
Shovel, 34 cu yd	173.3	173.3*	167.4	+3.5
Shovel, 1-11/2 cu yd	183./	183.7* 158.8*	174.3 154.4	+2.8
Shovel, 3-342 cu yd	165.2	165.2*	162.7	T1.5
Shovel, 6 cu vd	184.1	184.1	179.5	+2.6
Crane, truck mounted	168.8	168.8*	164.2	+2.8
Crane, tractor mounted	135.1	135.1 155.1	135.1 152.7	+3.1
Bucket, clam shell	189.7	189.7	180.8	+4.9
Scrapers and Graders		150.6*	158.8	+3.0
Scraper, 4 Wheel, 8-10.5 cu wi	155.0	155.0	155.0	0
Scraper, 4 Wheel, 12-15 cu yd Scraper, 2 Wheel, 14-18 cu yd (a)	154.4	154.4	151.3	+2.0
Scraper, 2 Wheel, 14-18 cu yd (a).	123.7	126.2*	122.7	+0.8
Grader, heavy duty		164.2 161.2	164.0	+3.0
Tractors (non-farm, Incl Industrial)		187.3*	180.8	+3.4
Wheel-type, off highway (a)		129.9*	127.7	-1-0.4
Crawler-type, 45-60 dhp	191.9	191.9	182.6	+5.1
60-80 dhp		196.4	185.8	+5.7
80-120 dhp 120 and up dhp		191.3 201.3	186.7 191.8	+2.5
Machinery, Tractor Mounted		188.20	181.7	+4.1
Dozer, cable controlled	154.4	154.4*	151.6	+1.8
Dozer, hydraulic controlled	186.6	186.6*	177.3	+5.2
Cable power control unit		150.0	147.9	+2.4
Loader, shovel type		161.0	153.9	+4.6
Specialized Machinery Ditcher	156.6	152.3 156.6	150.2 154.1	+2.0
Roller, tandem	198.6	198.6	193.2	+2.8
Roller, 3 wheel	170.2	162.5	161.6	+5.3
Ripper and rooter	150.5	143.3	143.3	+5.0
Dewatering pump, 10 M gph Dewatering pump, 90 M gph	145 7	112.0° 145.7	111.7	+0.3
Portable Air Compressors		159.5	150.1	+0.3
Contractor's Air Tools		175.9°	164.3	
Mixers, Pavers, Spreaders		151.4°	148.8	+7.1
Mixer, portable, 11 cu ft	164.1	163.2°	160.1	+3.4
Mixer, portable, 16 cu ft		166.5°	162.7	+3.6
Mixer, truck, 6 cu yd	129.1	129.1*	125.7	+2.7
Mixer, paving, 34 cu ft	188.6	188.6	185.2	+1.8
Concrete finisher & spreader Bituminous distributor	192.3	183.5 122.3	173.0 122.4	+6.1
Bituminous spreader		160.3	160.3	+6.2
Bituminous paver	155.8	155.8	153.8	+1.3
Off-Highway Trucks, Wagons (b)	101.1	100.6	100.0	+1.1
Contractors off-highway truck (b) Trailer dump wagon (b)			100.0	+1.1

• a January, 1955=100 • b January, 1958=100 ° Revised BLS Primary Market Price Indexes, U.S. Department of Labor, 1947-49=100

# Orders Improve,Prices Rise Again

New orders for construction machines rose in January to the highest monthly rate since July, 1958. The month's total volume was the third highest on record for January, 23% above a year ago, according to the McGraw-Hill Economics Department index.

The uptrend in contractors' equipment purchases reflects the increase in their new business. Heavy construction contracts moved up last December and held at a high level through February. For the first two months of 1959, heavy construction contracts reported by Construction Methods totaled nearly \$3 billion, a 21% gain over the low volume of 1958. The rate of awards in February matched the January pace; the contract award index for both months was 209, based on 1949=100.

Manufacturers' prices of new construction equipment set a record high in January. The Bureau of Labor Statistics index moved up to 170.8, based on average prices during 1947-49 as 100.

January prices were up a slight 0.3% over December prices but were 3.3% above the January, 1958, average.

Running counter to the general uptrend in prices were rubber-tired tractors and scrapers. The BLS price index for two-wheel scrapers in the 14-18 yard class dipped by 2% in January and was only 0.8% higher than a year earlier. Rubber-tired, off-highway tractor prices dipped 1.3% in January and were only 0.4% above year-ago prices.

Among the types of equipment on which price tags moved higher in January were three-wheel rollers, rippers and rooters, and graders. The increases on these rigs ranged from 3% to 5%.

# Operator training a problem?



# LOOK HOW MICHIGAN SCRAPERS LICKED IT FOR THIS N. J. CONTRACTOR

Take a look at the operators on Sallcon Incorporated's scrapers. You're liable to see a new man every week or two. The reason is the high cost of labor. Handling mostly small contracts, this Somerville (New Jersey) firm frequently finds it most economical to lay off men between jobs—then rehire when they go onto a new site. "In half a month's

time," explains Jim Seibert, company president, "we may be forced to use two or more different operators per machine."



High travel speeds reduce waste time on jobs like this 48 acre, 150 home development in Middlesex County, N. J.

#### Clutching-none

"Under these conditions, it's naturally important to us that scrapers be as easy to operate and as easy to take care of as possible," continues Mr. Seibert. "We looked at them all... and decided on 10½ yard Model 110 Michigans. Their power steer, power shift, and torque converters take the effort out of moving dirt! New operators become pretty proficient after only a few cycles. Nobody wears away clutches, because there is no foot clutch. Gear selection is no longer critical; torque converter drive automatically balances speed and load.

"Michigan's hydraulic system is simple to master, also. The power train is easy to get at. What's more, based on our experience of last season, I feel Michigan 110's will prove extremely dependable over their entire working life."

# Output-160 pay yds hourly on 500 ft cycles

Production has been very good! On a typical housing development job, cutting roadways, each Michigan averaged 20 loads per 50-minute hour. One-way hauls were approximately 250 ft. Loading, with 85 hp pusher, took 40 to 45 seconds. Payloads in clay averaged 8 bank yards.



Positive ejection spreads load in seconds. Michigan controls are all-hydraulic; are actuated by easy-to-reach short-throw levers.

Power steer, no-clutch power shift-torque converter drive, good visibility help ease operator training.





A typical Michigan payload: 8 bank yards of clay, Pusher is an 85 hp crawler, Load time: under 45 seconds.

On tougher jobs—cutting railroad sidings and excavating industrial basements, for example—the 162 hp Michigans frequently are teamed with a 140 hp pusher (which cuts load time to 25 to 30 seconds).

#### Self-loads satisfactorily

Occasionally they work alone, self-loading close to their 8 yd struck capacity.

In tight-quarter assignments—like grading between houses and building driveways—their power steer and short turn radius speed cycles.

The machines drive everywhere under their own power. Spéeds up to 31½ mph.

# Check Michigan Scraper advantages on your job

Mobility, versatility, output—and ease of operation like this—we think, can help you too. For proof, we'd like to show you, first-hand, what Michigan Scrapers can do on the only job you really care about—your own! Let us bring a demonstrator to your work area. Let your own operators run it. Measure output. Compare performance. Then pick the size you need! Three models available, 10½, 19, 29 yds heaped.

Michigan is a registered trademark of



#### CLARK EQUIPMENT

Construction Machinery Division 2403 Pipestone Road Benton Hurbor 13, Michigan

In Canada: Canadian Clark, Ltd., St. Thomas, Ontario



# Rubber-tired dozer plugs \$10 per hour profit leak

The problem was sand. 3,400,000 yds of blow sand, playing its usual havoc with crawler tracks. Particularly with push-dozer tracks. Contractors, rebuilding a federal highway in Indiana, found their 320 hp pusher, working this rough material, needed a track repair job every 700 hours. Cost, \$7,000! Or \$10 an hour—over and above normal operating costs.

When need arose for a second pusher, contractors got ready to shell out another \$10 an hour.

#### Solution-rubber

"Before we do," said the project supt and a 29-year veteran

in the business, "let's look at the latest rubber-tired dozers. Sand shouldn't be nearly as hard on rubber as it is on steel tracks."

"Agreed," management answered. "But any rubber-shod rig we buy must do as good a pushing job as our 320 hp

One machine did. A 375 hp Michigan Model 380 Dozer brought in by the Clark distributor. Contractors bought it!

#### 15 pay yds: 20 to 80 seconds

From that day on, the Michigan and the big crawler



High dozing speeds let the one Michigan do work of two crawlers, spreading fill.

Fost backup, power-shifted at flick of small lever, saves deadhead time between push cycles.





Maintenance costs went way down when Michigan Dozer went to work on this highway relocation.

together handled push-loading of a fleet of seven 25-yd scrapers. Performance of the two pushers was very much the same. Per-scraper load time, either loading unit, varied from 20 to 80 seconds (depending upon the soil). Scraper loads, with either crawler or Michigan, measured 15-plus pay yds. Output, per pusher, with scrapers on one mile haul, ran about 2,150 pay yds per 8-hour day.

#### Speed provides bonus

Why was the contractor so pleased? Well, he eliminated \$10 an hour in track maintenance, at no decrease in push-loading efficiency. He also got a bonus in speed. One day, for instance, the Michigan alone spread all fill... a job which normally took two 191 hp crawler dozers. Another time, when the pushers had to work two different borrow areas in one day, the 25 mph Michigan reached the second site so quickly it got in half an hour's work while the crawler was still creeping along the road shoulder. And the firm expects to use the Michigan on still other applications on other jobs. Says the supt, "This unit sure is not just a special-purpose sand machine. It can do as good a job as a crawler—or a better one—on about 70% of what some people call "big crawler" applications. Mud, not as good maybe. But sand, clay, dirt—excellent!"

See for yourself. Write our sales department, in Benton Harbor for data. Or call your nearest Michigan Distributor for a demonstration.



Michigan is a registered trademark of Clark Equipment Company Construction Machinery Division 2403 Pipestone Road Benton Harbor 14, Michigen In Consider Consider Clark, Ltd. St. Thomas. Ontario.

#### Veteran operator analyzes the new Michigan Dozer

(The writer used to be the contractor's boss scraper operator—the man who paced the fleet, helped decide which section of the borrow should be cut, etc. He tested the Michigan, now operates it. Here's what he says...)

"What's the difference between a crawler and a Michigan pusher? Well, first of all, you get an entirely different view of things from the Michigan. You sit higher. You look down on the scraper operator. You can see his signal or signal him without looking up, over or around a pile of dirt. You can see the load coming into the bowl and your blade contacting the scraper pushblock.

"Sticking with the pushblock is easier, too. If the scraper starts to drift to one side, all you do is turn your steering wheel slightly. No need to lock a track or skid and slide around. Or if the scraper starts to bog down, the Michigan's torque converter automatically gives you less speed (and more power) without foot-clutching or shifting gears. If the scraper starts to run away, you automatically get more speed (and less power). So you and the scraper work together from one end of the cut to the other.

"With the Michigan, you normally can push faster than with a crawler, thus get better load boiling and tighter fuller packing. I normally push at speeds up to 6½ mph (second gear). Sometimes, in tough going, I power shift down to low by moving a lever the way you do on an automatic transmission car. (No clutching.) Then, I work at about 3 mph. On easy pushing, I move up to third gear (13 mph). I back up at 13 mph too.

"Here's another trick I've learned. After pushing a pan through the cut—especially if the swath is rough and bumpy—I down-pressure the blade to ground level, and power-shift into reverse. The blade chops off all high points, makes the ground smooth again. It means better travel for the next pan you push through! And more production!"



# "New" handyman

Unusual uses of Michigan Tractor Shovels reduces costs for Montana contractor on wide variety of tasks . . . including digging basements, placing pre-fabricated walls

On the Riverview Terrace housing project in Great Falls, Montana—where William N. Kessner, Inc. is building 150 \$15,000 homes per year—a pair of Michigan Tractor Shovels has reduced costs of virtually every material handling operation!

Their versatility has prompted company officials to term the two rigs "as " necessary to the home-builder as 2 x 4's." Yet, not so long ago, Kessner's original Michigan—a Model 75A with two yard bucket—was used exclusively for the normal building construction chore of loading spoil into haul trucks. But, despite the huge size of the housing project, the machine soon showed it had free time. So it began cleaning spillage off driveways and sidewalks, too. Then Kessner put it to work trimming the edges of freshly dug basements. Then backfilling

around foundations and service lines. Then clearing brush and debris. Then digging the basements! (Rig worked so well here, this unusual rubber-tired task has become a Michigan "specialty." Typical basement, 24 x 30 ft by 6 ft deep, through sandy clay and gumbo, takes about three hours to dig and trim.)

#### 2,000 ft of lumber per load

For still other jobs—such as handling lumber, palletized stone, and packaged supplies—Kessner replaced the Michigan's bucket with a pair of forks. Rig worked fine on these assignments too, but for one trouble. Though changeover took only a few minutes, Kessner often found that a truckload would have to



Basement digging is one of many chores handled by Michigan Tractor Shovels on Riverview Terrace housing project in Great Falls.



Fork-equipped Michigan Model 75A picks 2,000 board feet off haul truck, delivers it to contractor's carpentry shop.



Wall section, prefabbed at shop, is steadled in vertical position by Michigan for precision spotting on concrete foundation.



"Good-will" advantage of Michigan among local residents . . . its quiet operation on such jobs as cleanup after street graveling.

# for home-builders

wait while the Michigan was completing certain of its ever-increasing group of bucket tasks. So in came a second Michigan, purchased from local distributor Miller Machinery Co.

This unit, another 80 hp Model 75A, was equipped with a set of forks and assigned primarily to handling the building supplies. Immediately, truck tie-ups vanished. The Michigan could easily pick up a 2,000 board foot truck load and deliver it in one trip right to the carpenter's shop. Then came another time-saving idea.

"If the Michigan could deliver big lots of lumber to the carpenter's shop," reasoned Kessner officials, "why couldn't it carry them out again in big lots?" Lifts, holds wall sections

And that's just what happened. Carpenters nailed together large wall sections of the home under the ideal working conditions of the shop area. Work went faster, the product turned out neater, stronger, more perfect. Each completed section-loaded on the truck by the Michigan fork lift-was trucked to the appropriate building foundation; then unloaded, lifted and held by the Michigan for precision placement on the foundation. For the average house, the four "prefab" walls could thus be set in about three-quarters of an hour! The saving? Literally days over customary erect-in-place methods.

See for yourself

There are dozens of time-saving construction uses like these for Michigan Tractor Shovels and their many buckets and attachments (including crane hooks, back hoes, sweepers, backfiller blades, scarifiers). Make a list of material-handling chores you'd like to speed (or make more economical) . . . then ask your Michigan Distributor for a demonstration of each. Judge for yourself. We think you'll like what you see.

Michigan is the trademark of

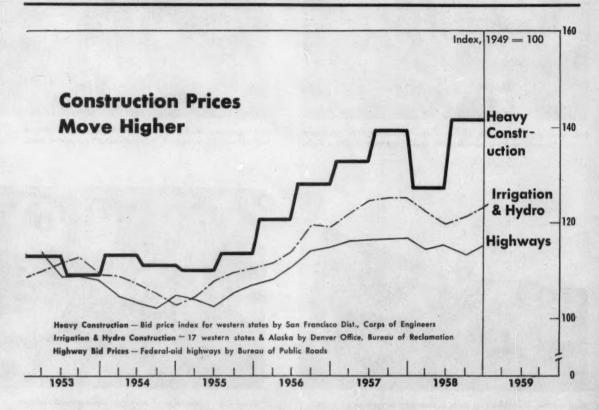
CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK EQUIPMENT

403 Pipesione Road enion Harbor 12, Michigan

in Canada : Canadian Clark, Ltd. St. Thomas, Ontario

#### Construction Business ...



## **Contractors Boost Their Bids**

INCREASING COSTS are pushing contractors' bid prices up. This trend shows clearly in the latest bid price indexes for highways and other heavy construction. And building contractors' selling indexes are also moving up.

Basic reasons for the upturn in contractors' selling prices is the pressure of wage hikes and recent increases in the cost of lumber, cement (in the Northeast), and construction equipment.

There are indications that contractors may be raising their prices a bit more, percentagewise, than the recent increase in basic costs. The reason for this is that in 1957 and early 1958 profit margins were dangerously thin because of stiff competition. During that period construction prices moved up for many types of work, but the increases were much less than the rise in basic costs—materials, labor, and equipment.

Now that the trend of new business has reversed itself and the industry is coming out of the woods, enough of the edge may be off competition to permit contractors to pass on more of the cost rise in higher bid prices.

But contractors bid prices aren't likely to catch up with the cost rise of the last two years. Higher productivity due largely to increased mechanization, has enabled contractors to offset part of the rise in prices of the materials, manpower, and machines that they must buy to do the job.

#### Highway Prices Are Mostly Higher

The latest information on highway bid prices from the Bureau of Public Roads and individual state highway departments shows half of the indexes rising and the others dropping in the last quarter of 1958.

The Bureau of Public Roads Composite Mile Prices Index rose 1.7% in the last three months of 1958. The rise in this index, which measures the trend in bid prices on federal-air highway jobs, is due to higher average prices for all bid items except reinforcing steel. Biggest increase was a jump of 2.7% in the price of structural steel, though the average price of \$0.191 per lb was 15% below the recent high.

Average bids rose 2.1% for common excavation, 1.8% for portland cement concrete pavement, and 1.7% for structural concrete. Reinforcing bar prices dipped a fraction of 1% to their lowest point in 2½ years.

Also rising during the last quarter of 1958 were the bid price indexes for California and South Dakota. Bids on California state highways increased 4.4%, according to the state's Highway Division. South Dakota reported a jump of 19% to the highest level since mid-1957.

By contrast, state highway departments note a drop in fourth quarter bids in Colorado, -7%, Idaho, -7%, and Nevada, -17%.

continued on page 51

### SPECIAL REPORT TO CATERPILLAR OWNERS:

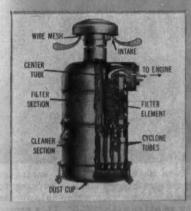


Parts you can trust. Dependable round-the-clock service

New Caterpillar dry-type air cleaner: CUTS SERVICING TIME 75% AVAILABLE FOR FIELD INSTALLATION on D8, D9, DW20, DW21 and No. 583

AIR-BORNE DUST is the deadly enemy of your engine's vital parts. Now, the new Cat dry-type cleaner gives positive protection against the entrance of harmful dirt—and its simplified servicing requires only about 5 minutes instead of 20 as with the oil-bath type!





of the air-borne dust from the intake air, even under the most severe conditions. Air enters through the stack cap where wire mesh screens out leaves and similar trash. Then the air passes down the center tube and swirls down the cyclone tubes. Centrifugal action throws the dirt against the sides of the tubes. From here 95% of the dirt falls through the funnel section into the dust cup, and the relatively clean air passes on to the resin-impregnated, cellulose filter. This element removes the rest of dirt and allows only clean air to enter the intake manifold. Filter elements can be cleaned and have lasted 3,000 hours without loss of efficiency.

SERVICE COSTS ARE SLASHED! Here is the experience of WEGCO Equipment Rental, Inc. of Cleveland, N. C., as told by the Superintendent of Maintenance, Mr. George R. Bell, "The dry-type cleaner saves us money. We have to clean our air cleaners daily because of dusty conditions. The oil-bath cleaners take about 20 minutes to clean and 5 quarts of oil. That's 60 cents in labor and \$1.28 worth of oil, a total of \$1.88 per machine. This dry-type cleaner takes only 5 minutes to service—about 15 cents labor. It saves us \$1.73 on each machine every day."





SERVICE TIP: To empty dry-type cleaner dust cup, simply loosen wing nuts, remove cup, empty and replace. Occasionally the filter element will need cleaning. Merely remove it, blow off dust or wash in water, then replace.

YOUR CATERPILLAR DEALER has the full story on how much you can save by changing to the new and efficient Cat dry-type air cleaner. Remember, he stands behind every part he sells. See him today!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

Garcellar and Gat are Registered Trademarks of Controllar Tradem Co.

#### ENGINEER'S FIELD REPORT

RODUCT RPM DELO OIL

Silva & Hill Construction Co.
FIRM Los Angeles, Calif.

# 5,000 hours at 2,000 rpm before overhaul



Working at 2,000 rpm speeds in heavy dust, Silva & Hill Construction Co. operates 8 Caterpillar DW-21s (like one above) five days a week removing 3,500,000 cu. yds. of dirt and rock for Burbank golf course. Firm reports RPM DELO OIL keeps these units rolling an average of 5,000 hours before

major overhaul. Says Maint. Supt. H. C. Basinger: "We've got 39 diesel-powered machines working to beat a one-year deadline. Any unexpected delay costs plenty. That's why we stick with 'DELO'. It's proved it will keep equipment rolling longer without engine breakdowns or repairs."





Lubricated with RPM DELO OIL, this Caterpillar D-8 Tractor (left) turned in 10,000 hours, bulldozing and pulling sheepsfoot

RPM DELO rollers, before major overhaul. Frank W. Hill (right) Silva & Hill partner, reports: "We've used RPM DELO OIL in all our diesel units since 1940. It has really paid off in keeping our equipment in top running condition."

RADEMARKS "RPM DELO" AND CHEVRON DESIGN REG. U.S. PAT. OFF.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey

#### Why RPM DELO Oils reduce wear—prolong engine life

- Oil stays on engine parts—hot or cold, running or idle
- Anti-oxidant resists lacquer formation
- Detergent keeps
   parts clean
- Special compounds prevent corrosion of bearing metals
- Inhibitor resists crankcase foaming.



For More Information

or the name of your nearest distributor, write or call any of the companies below.

STANDARD OIL COMPANY OF TEXAS, El Paso The California Company, Denver 1, Colorado

#### Irrigation-Hydro Costs Rise Again in January

Irrigation and hydro construction costs are rising in the 17 western states and Alaska, according to the Denver Office, Bureau of Reclamation. Its quarterly cost index chalked up the second consecutive quarterly rise in January and is now close to the record high set in October, 1957.

Canal construction was the only major category of work that failed to rise in cost. Sharpest increases came in laterals and drains, hydro-power plants, earth dams, steel penstocks and discharge pipes.

New record highs were set by BuRec's cost indexes for pumping plants, hydro-power plants, steel transmission towers, general buildings, switch yards and substations.

By contrast, January, 1959, costs were well below their highs (set late in 1957 or in January, 1958) for earth dams, concrete dams, canals, laterals and drains. Costs of primary roads and bridges are slightly below their 1957 highs.

The relatively low costs which still prevail on most types of heavy construction measured by the BuRec indexes reflects the increased competition for new work available. The bureau reports that the number of bidders averaged 7.3 per project in the final quarter of 1958. This was higher than in either the second or third quarters of the year and about 14% above the average of 6.4 bidders per project during the last five years.

The increase in construction costs in the last few months is less than the corresponding rise in basic costs of materials, labor, and equipment during the year. The Bureau reports that construction wage rates are currently about 5% higher than a year ago and 11% more than two years ago. It also notes increases of from 3% to 5% for some types of construction machinery and equipment. Steel and lumber costs rose about 4% during the year 1958, but cement prices

changed little, and aluminum costs dropped about 4%.

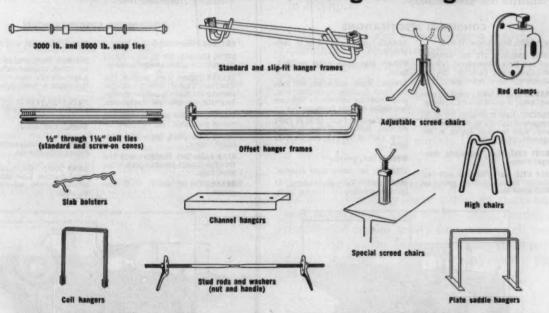
Contractors' bids have tended to run below BuRec's engineering estimates, probably because of increased competition among contractors. During the fourth quarter, the three low bids on each of the five major contracts let averaged 6% below the engineering estimates. On all 23 construction schedules up for bids during the quarter, 17 had low bids that were under the estimates. The low bids averaged 13% below the estimates.

#### **Heavy Construction Price Index Rebounds**

Contractors' bids on heavy construction projects in western states turned sharply higher in the second half of last year. The San Francisco District, Corps of Engineers reports its Contract Unit Price Index jumped 11.6% above the first half of 1958. This more than offsets th 8.7% drop in the first half. Moreover, the jump pushes the index to a new high.

continued on page 56

#### Pick SURE-GRIP accessories for better concrete forming on bridges



One dependable source for all concrete forming accessories needed neers will gladly help plan your forming requirements and layon bridge superstructures and substructures. Our forming engi-

outs. Complete information and free catalog available on request.

The Dayton SURE-GRIP and Shore Co., 113 Kercher St., Miamisburg, Ohio

# MACKS...for every co



#### **MACK MODEL LRX 15-TON DUMPER**

Extra trips per shift are won by Mack Model LRX's jack-rabbit agility in starting, turning and backing with capacity loads aboard. Built to shrug off the relentless pounding of big-yardage shovels, LRX is a hustler over the flat or up steep grades. LRX is loaded with features for top performance and economy: Mack or Cummins diesel engines up to 220 hp...powerful air brakes for steep descents... Mack ten-speed transmission... Planidrive rear-axle assembly.

#### CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 15 tons.

DRSEE ENGINES: 170 hp, naturally aspirated Mack Thermodyne; 220 kg maturally-aspirated Cummins; 205 hp turbocharged Mack Thermodyne.

TRANSMISSION: Mack, selective, constant-mesh, 10 speeds forward, 2 reverse.

CLUTCHES: Mack single-plate, 253 sq. in. engagement (for 170 hp Mack Thermodyne); Mack two-plate, 416 sq. in. engagement (for other sizes).

FRONT AXLE: Mack, heavy-duty, dropforged I-beam.

REAR AXLE: Mack Planidrive, with fina reduction through planetary gear train within wheel hubs. BRAKES: Full air, with 71/4 cu. ft. compressor.

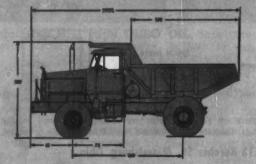
FRAME: Wide flange, rolled section 1beam.

SPRINGS: Front, semi-elliptic with Rubber Shock Insulator suspension; rear, progressive-rate semi-elliptic with cam face slipper ends and radius rod.

TiRES: Standard: Front, 12.00-24 (16P) rib; rear, 14.00-24 (18P) fug. Optional: Front, 13.00-24 (18P) rib; rear, 16.00-25 (20P) lug.

WHEELS: Cast, spoked.

STEERING: 60' turning circle diameter. DUMP NOIST: Twin, double-acting, 8" cylinders providing 70° dumping angle.





#### MACK MODEL LVX 22:-TON DUMPER

Built to pit power and strength against slam-bang job sites, Mack LVX sticks to the job for years of sustained, like-new performance. Rugged power-train offers a 300 or 335 hp diesel engine, Mack overgeared transmission (with two-speed compound or torque converter), and Mack Planidrive rear axle. For smooth, swift maneuverability it's in a class by itself—thanks to ideal power steering system, air-assisted clutch, and offset cab for maximum visibility front and rear.

#### CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 221/2 tens.

DIESEL ENGINES: 320 hp, supercharged Cummins; 335 hp turbocharged Cummins

TRANSMISSIONS: Mack, selective, constant mesh, 8 speeds forward, 2 reverse, converter and Mack 4-speed transmission; Torquestic converter and transmission.
CLUTCH: Mack two-plate, eir-assist with

FRONT AXLE: Mack, heavy-duty, drapforged I-beam.

REAR AXLE: Mack Planidrive, with final reduction through planetary gears within wheel hubs.

BRAKES: Full air, with 12 ca. ft. com

FRAME: Alloy-steel, wide flange I-beam.

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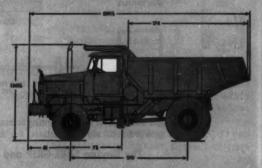
SPRINGS: Front, semi-elliptic with Rubber Shock Insulator suspension; rear, progressive-rate semi-elliptic with comface slipper ends and radius red.

TIRES: Front, 14.00-24 (16P) rib or 14.00-24 (20P) rib; reer, 18.00-25 (24P) lug.

WHEELS: Cast, spoked.

STEERING: Hydraulic power-stearing, 62' turning circle diameter.

DUMP NOIST: Twin, double-acting, out board-mounted, three-section telescopic cylinder assembly, providing 70° dump ing angle.



EXCAVATING. . . FILLING. . . EQUIPMENT HAULING . . . AGGREGATE AND

# construction job...rugged or routine



#### MACK B-80 SERIES TRUCKS and TRACTORS

Here's Mack profit-power personified! There are B-80 tractors for heavy-duty hauling of platform or dump trailers...B-80 truck chassis for dumper, mixer or utility service. B-80's are powered with 170 to 232 hp Mack gasoline or diesel engines, or with Cummins diesels from 220 to 320 hp. Choice of Mack transmissions up to 20-speed Quadruplex. Powerful, rugged braking power. Available in four- or six-wheel models including six-wheel-drive units. Option of power steering.

#### CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 7 to 13 cubic yards or as mixers, 7½ to 8½ cubic yards (larger dumpers or mixers may require special provision).

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14.00-P) lug.

Mg, 62'

ENGINES: Gasoline: Mack Thermodyne, 232 hp. Diesel: Mack Thermodyne, 170 hp; 205 hp, with turbocherger. Cummins, 270 hp; 320 hp with supercharger.

TEARSMISSIONS: Mack: Five-speed, direct or overgeared. Ten-speed (two-lever) Duplex. Twanty-speed Quadruplex. Availability contingent upon chassis models.

FRONT AXLE: Mack, heavy-duty, drop-

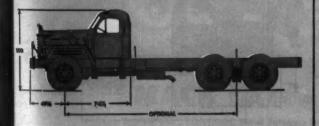
forged I-beam. Mack, front-wheel-drive, for 6x6 chassis.

REAR AXLES: Four-wheelers: Mack Dual Reduction, with radius rods and torque arms. Six-wheelers: Mack Balanced Bogle, Dual Reduction, through-drive, inter-axle Mack Power Divider.

FRAME: Channel: Alloy-steel, heat

TIRES: Aveilable sizes and types: 11.00-24, 12.00-24 (Four-wheeler); 11.00-22, 11.00-24, 12.00-24 (Six-wheeler). Size availability contingent upon bogie.

STEERING: Hydraulic power-steering (optional extra).



# Only MACKS offer all these profit-power features

Quality that can't be measured by specifications. "Specs" only tell half the Mack story. Mack on-the-job records tell the rest. For over half a century, Macks have out-earned, outworked and outlasted any other make of truck on demanding jobs. That's because every Mack starts with the most advanced design and the most durable materials... is built to the highest standards of strength and precision... is tested through every stage of construction.

Trucks and tractors for every construction job. As dumpers, mixers; tractors or platform trucks, dependable, economical Macks are engineered right for every important construction task.

Widest choice of engines. Mack offers a complete range of proved truck engines: Mack gasoline engines at 150 hp... Mack Thermodyne<sup>®</sup> diesel, Mack gasoline or stock diesel engines from 170 to 450 hp.

Super-capacity and all-wheel-drive models. For capacities up to 40 tons where maximum flotation is required, a full line of tandem rear-axle Macks is available. For utmost traction, Mack front-wheel-drive assemblies offer you four wheelers with four-wheel drive and six wheelers with six-wheel drive—models that can move heavy loads over any surface that will support a truck.

Parts and service wherever you operate. Mack owners everywhere have complete parts-and-service coverage. Your nearby Mack branch or distributor carries nearly any part you'll need on the job . . . and behind them are Mack parts depots that can ship out any replacement part at a moment's notice.

For capacities of 30 tans or more where maximum flatation is required, a full line of tandem rear axle Macks is available.

# ACKS...stock or custon





#### MACK B-60 SERIES TRUCKS and TRACTORS

As dumpers, mixers, tractors and platform trucks, Mack B-60's have hung up records for economy on every kind of job. The "workhorse of the industry," they're powered with Mack Thermodyne gasoline or diesel engines from 170 to 205 hp. Four- and six-wheelers. Six-wheel models feature the exclusive Mack Balanced Bogie with Power Divider for non-spin traction through mud, loose gravel or sand. Longest mileage life in its class.

#### CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 6 to 12 cubic yards or as mixers, 5½ to 7½ cubic yards (with options).

ENGINES: Gasoline: Mack Thermodyne, 185 hp. Diesel: Mack Thermodyne, 170 hp; 205 hp with turbocharger.

TRANSMISSIONS: Mack: Five-speed, direct. Ten-speed (two-lever) Duplex. Twenty-speed Quadruplex. Ten- and eds both on- and off-highway types. Availability contingent upon

FRONT AXLES: Mack, heavy-duly, drop-forged I-beam. Three available sizes.

REAR AXLES: Four-wheelers: Mack Dual m-with radius rods and torque arms. Six-wheelers: Mack Balanced Bogie, Dual Reduction, through-drive, inter-axle Mack Power Divider. Three gie sizes available.

FRAME: Channel: Alloy-steel, heattreated, pressed; channel reinforcements for maximum services (standard or optional extra).

TIRES: Available sizes and types: 11.00-24, 12.00-24 (Four-wheeler). 10.00-20, 10.00-22, 11.00-20, 11.00-22, 11.00-24 (Six-wheeler). Size availability contingent upon bogies required.

STEERING: Hydraulic-power type

With big-truck capacity and stamipa . . . with small-fruck agility and economy . . . Mack B-40's are always in demand as dumpers, tractors, mixers and platform trucks. Mack Magnadyne gasoline engines develop 150 hp at low, lifeprolonging engine speeds. Mack transmissions up to 20-speed "Quads." Four-wheel models and six-wheelers with Balanced Bogie with Power Divider. All-wheel-drive models, as well. Like all Macks, B-40's are engineered, built and tested with one objective: sure-fire performance on rugged jobs over long periods of time.

MACK B-40 SERIES TRUCKS and TRACTORS

#### CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 5 to 10 cubic REAR AXLES: Four-wheelers: Mack Dust yards or as mixers, 5½ to 6 cubic yards (with options).

INGINE: Gasoline: Mack Magnadyne, 150 hp.

TRANSMISSIONS: Mack: Five-speed, direct. Ten-speed two-lever Duplex. Twenty-speed Quadruplex. Ten- and lwenty-speed, both on- and off-highway types. Availability contingent upon

FRONT AXLES: Mack, heavy-duty, drop-forged 1-beam. Four sizes. Mack, frontel drive (for 6x6 chassis).

Reduction. Six-wheeler Bogie: Mack Delanced Bogie, Dual Reduction, through-drive, inter-axle Mack Power Divider. FRAME: Channel: Alloy-steel, heattreated, pressed; appropriate inside-channel reinforcement (standard or optional extra).

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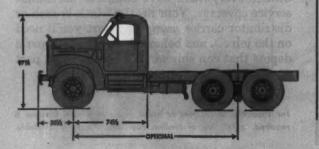
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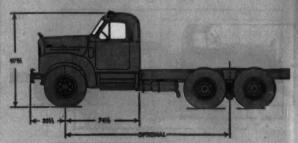
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TIRES: Available sizes and types: 10.00-20, 11.00-20, 11.00-22 (Four-wheeler). 8.25-20, 9.00-20, 10.00-20, 10.00-22, 11.00-20 (Stx-wheeler). Availability contingent upon chassis.

STEERING: Hydraulic power-steering (optional extra).





EXCAVATING...FILLING...EQUIPMENT HAULING...AGGREGATE AND

# uilt...for your specific job

# Here's how MACK custom assembles the truck to fit your job

Mack builds every major component in a wide range of capacities ranging through super-duty. So—

Whatever kind of operation you have... whatever loads you haul... whatever problems you face by way of terrain, climate or grades... we can select the interchangeable, Mack-built components that meet these conditions and custom assemble them into the most efficient truck you can buy. (Stock models available too, of course.)

#### And only Mack offers quality features like these—

#### THE STRENGTH OF MACK-BUILT FRONT AXLES

ack's drop-forged I-beam front axles are made super strong long, trouble-free service. Extensive use of heat-treated els for crucial parts means minimum maintenance. And ack's exclusive front-drive axle for all-wheel-drive trucks er the greatest ground clearance and strength of any made—th all parts fully enclosed.



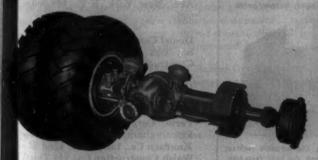
#### THE LONG LIFE OF MACK-BUILT TRANSMISSIONS

Service records prove that Mack transmissions—like this 20-speed Quadruplex—stand up to heavy-duty hauling far longer and need less attention than any others—thanks to the use of the finest gear metals known... to painstaking precision manufacture... and to exclusive Tetrapoid gear design that gives maximum strength, longer life and smoother action. Five-to twenty-speed units, each with ideal ratio steps.



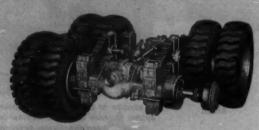
#### THE DURABILITY OF MACK-BUILT 2-WHEEL REAR AXLES

ack's two-wheel, rear-axle assemblies have an unmatched outation for service under strenuous conditions. Dual Rection, gear-type differential and Mack's famous planetary ar reduction at the wheel hubs (Planidrive) provide the ooth distribution of power vital to top truck performance.



#### THE TRACTION OF MACK-BUILT BALANCED BOGIES

Macks perform where other trucks bog down—in mud, loose gravel or sand—thanks to Mack's exclusive Balanced Bogie with Power Divider. It's a 4-wheel-drive, tandem rear-axle assembly with an inter-axle differential that directs the most power to the wheels having greater traction. Planidrive final reduction in all four hubs eliminates the need for bulky carriers, differentials or axle shafts. Clearance is increased, weight is reduced, maintenance is fast and simple.



#### MACK first name for TRUCKS

Mack Trucks, Inc., Plainfield, New Jersey . In Canada: Mack Trucks of Canada, Ltd.

ATERIALS HAULING. . . CONCRETE, DRY-MIX AND ASPHALT HAULING

# ONLY RAMSET

offers over 100 different powder-driven fasteners for specific jobs



Ramset, and only Ramset, offers a complete line of "job-fitted" fasteners . . . guarantees the most economical fastener for every application. Versatile Ramset is the best-known and most widely-used powder-actuated fastening system in the entire construction field.

In fastening to steel, concrete or masonry, Ramset tools are easiest to use . . . Ramset austempered fasteners are the best you can buy, and perform where others fail. Find out about the astounding savings . . . the absolute superiority of the Ramset Fastening System. Find your dealer's name under "Tools" in the Yellow Pages or write us direct.

Write for your copy of this handy fastener guide



In addition to powder-actuated fastening, the versatile Ramset System includes Shure-Set hammer-in tools for light fastening, and Ringblaster heavy-duty klin gun.

Ramset Fastening System

WINCHESTER-WESTERN DIVISION . OLIN-MATHIESON CHEMICAL CORPORATION 12103—C BEREA ROAD . CLEVELAND, OHIO

#### CONSTRUCTION BUSINESS . . continued from page 51

This rise is much more than the recent increases shown by the Bureau of Public Roads Composite Mile or the Bureau of Reclamation cost indexes. It is based on the average prices of many bid items in the three lowest bids on significant heavy construction projects.

Most of the individual items included in the Contract Unit Price Index rose in the last half of 1958. Concrete payament averaged a whopping 40% higher-\$28 per cu yd-and structural concrete prices rose 6.3% though cement prices moved up only 3.6%. Roadway excavation prices rose 5.5%. but structural excavation bids averaged 12.4% higher than in the first half of the year. Reinforcing steel was up only slightly. Corrugated metal pipe in 12-in. and 24-in. sizes also rose, as did clay, reinforced concrete, and cast iron pipe prices.

By contrast, prices declined for plant mix aggregate, 6.2%, and plant mix asphalt, 8.7%. Crushed rock base course prices dropped sharply.

#### SOME BIG CONTRACT AWARDS OF THE MONTH

George A. Fuller Co., 597 Madison Ave., Webb & Knapp Construction Co., 385 Madison Ave., New York, N.Y. Construct a 48-story 2,000 room hotel on the Avenue of the Americas between 51st & 52nd Sts., N.Y.C. Zeckendorf Hotels Corp., 383 Madison Ave., New York, N.Y. \$66,000,-000.

Daniel Construction Co., 429 Main St., Box 2286, Greenville, S.C. Construct a polyester fiber plant at Shelby, N.C. Fiber Industries, Inc., Celanese Bldg., Charlotte, N.C. \$50,000,000.

Perini Corp., 73 Montwait Ave., Framingham, Mass., Morrison Knudsen Co., Inc., 150 E 42nd St., Walsh Construction Co., 711 Third Ave., New York, N.Y. A joint venture to construct the first section of water tunnel from Wachusett to Marlboro, Mass. Commonwealth of Mass., Constr. Div., 20 Somerset St., Boston, Mass. \$16,883,011.

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Pneumatic-tired SB-60 in travel position. Screed, feeder and dler crawlers under hopper hydraulically raise for travel Barber @ Greene Pneumatic-tired \$8-60 (shown), Model 5A-60 has

TWO NEW

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heavy-duty...high-capacity...high-speed FINISHERS

#### CRAWLERS or PNEUMATICS

Designed throughout for heavy-duty, high-capacity, low-maintenance operation, these two new Barber-Greenes offer the ultimate in hightonnage production. They reduce nonproductive time, lay more miles per day at less cost per ton.

New design concepts give unequaled speed and maneuverability... 100% power steering (no clutches-no steering axle)... faster truck contact, discharge and release . . . feeder and screw speeds independent of travel speed ... new automatic feed control ... articulated, stabilized suspension . . . new unitized-construction . . . improved automatic leveling . . . hydraulically operated, high-speed tamper.

FOUR DIFFERENT FINISHERS. Only Barber-Greene offers a line of four finishers: the new 873, which paves on crawlers and travels on rubber; the new heavy-duty SA-60 and SB-60, shown above; and the famous 879-B unmatched for all types and sizes of jobs.



Self-cleaning, hydraulically operated hopper extends to extreme rear of chassis where gates are located.

These are just the high spots. Ask for complete information.

59-1-F



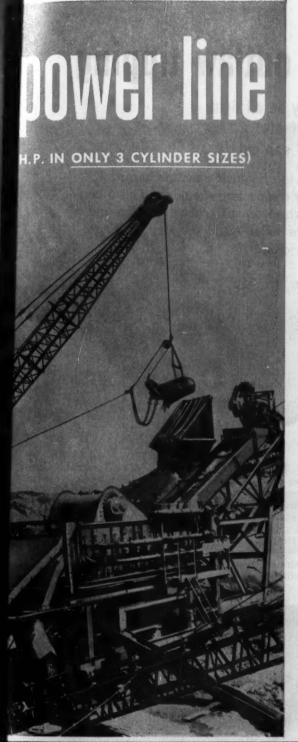
CONVEYORS...LOADERS...DITCHERS...ASPHALT PAVING EQUIPMENT

4 GREAT NEW all purpose engines in the

(20 TO 1650









NEW FOR THE CONSTRUCTION INDUSTRY

6-, 8-, 12-, and 16-cylinder "V" versions of the
famous GM Series 71 Diesel

The new V-71 "Jimmy" Diesels are a further illustration of GM Diesel's mighty new power concept—rounding out the All-Purpose Power Line—yet retaining the GM Diesel family relationship and parts interchangeability.

Here are engines that combine every profit-making, cost-saving advantage any Diesel has ever had. Diesels that boast an ingeniously engineered combination of new compactness, lightweight, high efficiency, durability and inexpensive maintenance.

These V-71 "Jimmy" Diesels are available in 6-, 8-, 12-, and 16-cylinder models rated from 112 to 675 h.p. plus 24- and 32-cylinder "Twins" up to 1650 h.p., when turbocharged. They're itching to get to work wherever there's hard work to be made easy.

To see how these new members of the All-Purpose Power Line meet your needs, write GM Diesel, Dept. C-3, Detroit 28, Michigan.



In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario Parts and Service Worldwide







The Seaman-Andwall 5620 Pneumatic Compactor is ultra-safe. Its low silhouette and extra width (92") provide an unusually low center of gravity. It has actually worked day in, day out on slopes as steep as 2 to 1 as illustrated above, without the slightest tendency to tip.



The 5620 is usually maneuverable; turns a full 180° on an 18 foot road. Operator sits sideways to direction of travel, can see his work even in close quarters.

Weight ranges from 7 tons empty to 20 tons with ballast,



Send for this illustrated literature with complete specifications on the 5620 Seaman-Andwall Pneumatic Compacter. Just a pestard will bring it promptly.



# Let's outlaw tipping

tipping may be all right in a restaurant . . . or to a red cap but . . .

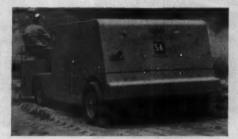
tipping is a too frequent operator hazard when you're compacting shoulders. Get a couple of outside wheels in space above a ditch and over goes the roller—and the man. Banish that danger!



Here's how. The SEAMAN-ANDWALL 5620 Pneumatic Compactor provides super-safety with an extraordinarily low center of gravity. It has actually worked successfully on a 2 to 1 side-slope (levee construction near Jackson, Mississippi). No holding cables to a bracing tractor at the top. The 5620 didn't even slip.

Apart from the safety factor the SEAMAN-ANDWALL 5620 Pneumatic does the job faster with its extra wide rolling width of 92 inches.

And the "straight down" pressure principle provided by front wheel drive eliminates surface shear, scuffing or displacement of materials.



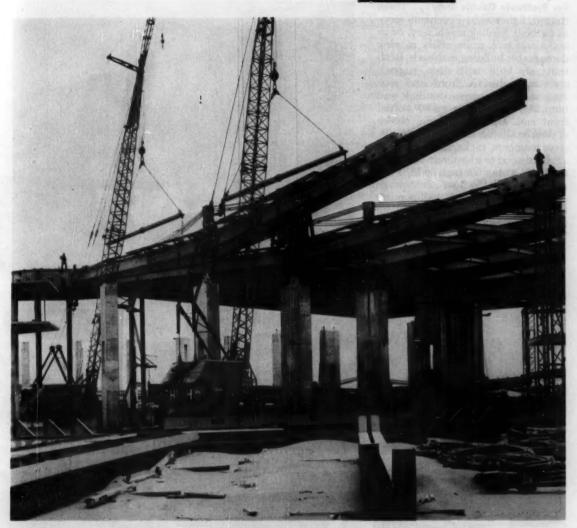
So for operator safety and for faster, lower cost compaction on the level, on steep grades or slopes—this season get yourself the 5620 SEAMAN-ANDWALL 7-20 ton Compactor.

# SEAMAN-ANDWALL

A subsidiary of American-Marietta Company

Elm Grove 4, Wisconsin

PICTURE MONTH



# A Roof as Big as a Ball Park

• Girders that cantilever out 124 ft beyond the walls of a building will frame an umbrella roof that covers an area of four acres. The job is Turner Construction Co.'s \$8-million terminal for Pan American Airways at New York International Airport. The elliptical roof will shelter four jet airliners at a time, making it possible to deliver passengers at the terminal "in the dry." Lehigh Construction Co. erects the girders—biggest is 224 ft long and weighs 76 tons—with a pair of 60-ton Manitowoc cranes lifting through spreader beams. Three pairs of steel cables will support each girder.

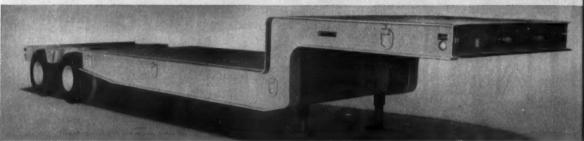
# NEWEST, BIGGEST TRAILER

Every Kind Of Construction Trailer Is Here In

#### NEW STEEL OR ALUMINUM WORKHORSE RACK PLATFORMS

For Profitable Double Duty . . . These rugged, lightweight Fruehaufs serve as flatbeds hauling machinery, or as stake and rack units safely moving damageable building materials. Both units are built with deep, rugged, steel main beams, front and rear cross members, corner castings, and bumpers. Both feature an 80" bolted front end. Options include: choice of steel or aluminum for outside rails, cross members, racks, and tarp bows ... hardwood or aluminum floors ... racks 48" wide x 60" high or 48" x 72" ... tie rings in the floor ... stowage area at front for bows . . . all popular lengths . . . and single or tandem underconstruction. Racks are interlocking, with convenient lifting bars.





More High Capacity Units In Fruehauf's Rugged Roadbuilder's Line



Lightweight Multi-Purpose Platforms



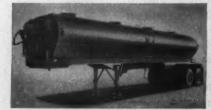
Steel and Aluminum Asphalt Tanks



Ligh unit thai necl king outs

brac cap

**Fabricated I-Beam Dump Trailers** 



Screw-Type Cement Tanks and Blow Units Removable Gooseneck Carryalls





Hopper-Type Dump Trailers

# LINE FOR ROADBUILDERS

Fruehauf's New, '59 Line Of Higher Capacity Units!

#### NEW ALL-WELDED ALUMINUM FRAMELESS DUMPS



#### NEW, LOWER-PRICED 35-TON CARRYALLS

Lightweight And Tough . . . The strength of this new machinery unit is built into 2 beams rather than 4. There is a shorter gooseneck than usual, yet the same turning clearance radius from the king pin because the main frame members have been moved to the outside. Options include side outriggers and side loading ramp brackets. Carryalls available in capacities to 75 tons.



Single and Tandem Axle Dump Chassis



Pole Trailers, Including Connector-Type

For Profitable Extra Payload . . . These advanced, lightweight units provide lower tare weight and increased payload. The body is of boxed construction with grid-type understructure. The dumping system features 8" diameter telescopic hoist, 195" power stroke, automatic by-pass valve, twin line hydraulic system, 25 gallon pump.

#### **NEW SINGLE AXLE CABLE DUMPS**

For Low-Cost Hauling . . . These new Fruehauf-Schonrock single axle units are up to 1000 pounds lighter and considerably less in cost than previous models. There is a 25% increase in dumping speed and 22% reduction in line pull. The heavy center frame is eliminated—the body shell carries the load. Unique wrap-around girdles pro-vide strength and rigidity. Single axle unit shown has 10 cubic yard water level capacity, automatic tail gate. Tandem units are also available.



For Forty-Five Years - More Fruehauf Trailers On The Road Than Any Other Make!



World's Largest Builder of Truck-Trailers

FRUEHAUF TRAILER COMPANY 10949 Harper Avenue • Detroit 32, Michigan

Send full facts with no obligation on Fruehauf units circled:

**PLATFORMS** 

DUMPS

CARRYALLS

**OTHERS** 

NAME

COMPANY

CITY\_

March 1959 - CONSTRUCTION METHODS and Equipment - Page 63



Proved again and again over the roughest, rockiest going in all the world, **GENERAL** Truck Tires are NYGEN - built to get every job done faster and for <u>less</u> whether it be in logging, construction, quarrying or mining.

Specify GENERALS on your new equipment

THE GENERAL TIRE & RUBBER COMPANY, AKRON, OHIO

#### Construction News in Pictures . . .



#### **Around the Curves**

To pave the high-banked curves of an auto race track at Daytona Beach, Fla., Macasphalt Corp. of Lakeland, Fla., detached the screed from a Cedarapids finisher and pull it along by means of a steel I-beam between the Cedarapids at the bottom and a Barber-Greene machine on top. A cable to a Caterpillar D8 helps hold the screed in position.

#### **Rooftop Derrick**

Stiffleg derrick on the roof erects steel for a narrow, 16-story addition to Employers Insurance Building in Dallas, Tex. Erectors & Riggers, Inc., of Houston, the steel erection contractor, figure a guy derrick would have required seven set-ups and five to eight additional working days. Four men assembled the stiffleg on the roof in six days.

continued on next page



#### CONSTRUCTION NEWS IN PICTURES ...



#### Piles in the Ice

Steel pipe piles—970 of them—will support a 110,000-sq-ft extension of Chicago's Navy Pier in Lake Michigan. Foundation contractor Harry A. Thompson, Inc., of Chicago drives the 12¾-in. Jones & Laughlin seamless piles in icy weather with a barge-mounted Manitowoc 3900 crane fitted with a Vulcan No. 0 hammer.



#### Lift Span Approach

Big girder rides into place for approach span of a railroad bridge between Staten Island, N. Y., and Elizabeth, N. J. The 558-ft vertical lift span will be the longest in the world. It will carry tracks of the Staten Island Rapid Transit Railway. American Bridge Division of U. S. Steel Corp. is the superstructure contractor.



#### It's Cold up There

Whenever the temperature rises above 10 deg, crews of Consolidated Constructors pour concrete for the walls of a U.S. Navy radio transmitting station near Cutler, Me. Concrete is mixed with heated aggregates and 100-deg water and delivered in transit-mix trucks. Walls of the building are reinforced with welded wire fabric.



#### **Delivering the Goods**

Rock blasted out for a road at the top of the cliff will go into construction of a dam at the bottom. J. W. Briggs Construction Co. is cutting through sheer basalt cliffs to build 10 miles of road near the site of Cougar Dam on the McKenzie River in Oregon. They push the shot rock over the 350-ft cliff with an International TD-24.



Products of ROCKWELL-STANDARD Corporation

# ALL-NEW ALEME '77' LUBRICANT PUMP DACKS MOSTHEST DELIVERY!

both up and down stroke.

 Medium-pressure (25 to 1 ratio) for heavyweight oils and light-bodied greases. Delivery on both up and down

Volume delivery (6 to 1 ratio) for

light-bodied fluid lubricants. Single-

acting pump mechanism.

68% More Powerful . . . outperforms any other air-operated lubricant pump of its class on the market today! The all-new 5.2 horsepower Alemite "77" Pump assures smoothest, fastest delivery of all lubricants, through longest lines!

Three Master Pressure Ratios for unequalled delivery of all lubricants — fluid, semi-solid and heavy fibrous types. Lightweight, rust-proof aluminum construction.

Precision Engineered from finest quality materials—designed for outstanding ease of operation and maximum performance. Models for 120-lb. or 400-lb. drums — for all industrial applications.

#### All-New Alemite "77" Features!

• Volume Air Distributing Valve—self-seating, self-cleaning, volume porting • Modern-Design, Highly Efficient Toggle Trip Mechanism provides balanced pressure on shuttle . . . won't bind • Straight-line Exhaust has extra-large port for highest pump efficiency • Hardened Steel Piston and Cylinder, lapped to a precision fit of 125 millionths of an inch • All-Steel Primer Valve, ground to a perfect seal . . . hardened for abrasion resistance • Dynamic Primer assures priming and pumping of heaviest lubricants.



Dept. P-39, 1850 Diversey Parkway, Chicago 14, Illinois



Write for New Alomite

"77" Pump Catalog!

With rising close One is to

equip fiction that the sette

# HRINKING PROFITS OR A BETTER RETURN ON NVESTMENT?

## 3 answers to the problem

With more bidders . . . low bid prices and rising costs . . . the pinch on profits demands a closer look at all phases of your operations. One of the surest ways to improve your profit picture is to use modern earthmovers with big power, big capacity and big performance. When considering equipment you have to weigh facts against fiction. The facts on these three big "Eucs" prove that they can cut your earthmoving costs and bring a better return on your investment.

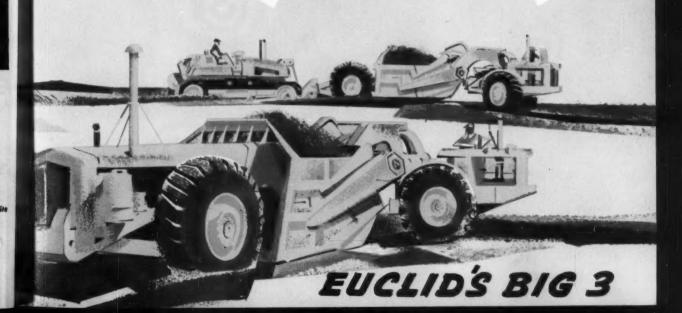
TG-12

TWIN-POWER

S-18

21-YD. SINGLE ENGINE SCRAPER TS-24

24-YD. "TWIN" SCRAPER



Functional "years-ahead" design results in 5 major advantages



CRAWLER

Dri

Big

into



Best all-around performer in its class!



21 to 30 yds.

SCRAPER

Twin Engines, with a total of 425 net h.p. and sepaate Torqmatic Drives, permit a completely new concept of crawler design. The TC-12 is years ahead of other actors in its work-ability for push-loading, dozing, apping and other big tractor work.

2. Independent Track Drives provide almost unbelievable mobility and maneuverability. With separate power trains and Torqmatic Drives, each track can work all of the time with its individually controlled speed and power . . . a big advantage for dozing and push-loading and for work on steep side slopes.

3. Easy, Fast Operation is achieved by Torqmatic Drives... one for each track. There's no master clutch... change from one speed range to another is made under full power... pivot turns can be made fast by

reversing direction of one track. Operator has excellent visibility to front and rear, convenient controls and ample room for comfort.

4. Track Alignment is constantly maintained because each track is rigidly positioned to its main frame . . . each half of the tractor oscillates on a big diameter transverse shaft forward of and independent of the final drive.

5. Unitized Assembly of Major Components. Exceptional accessibility and unitized assembly of converter, transmission and drive case components, result in less downtime. For example, both drive sprockets can be removed and replaced in about one-third the time required for a competitive big crawler . . . final drives in just a fourth of the time.



Here's a big power, big performance team that paces the field in low cost yardage . . . the S-18 "Euc" Scraper of 21 yd. struck capacity and the TC-12 Twin-Power Crawler. With 425 net h.p. delivered to the power train and a separate Torqmatic Drive for each track, the TC-12 is the most powerful, most mobile crawler for push-loading. The S-18 loads fast and has a 336 h.p. engine with Torqmatic Drive and converter lock-up for high travel speed, outstanding gradeability and efficient use of engine power.

Big Capacity of 21 yds. struck, 24 yds. at 3:1 slope and 30 yds. at 1:1 in the low, wide bowl originated by Euclid. By actual scale weight on job after job "Euc" scrapers carry more payload pounds than other scrapers of the same rated capacity.

Converter Lock-up with the 4-speed Torqmatic Drive assures maximum efficiency on grades and long, high speed hauls. The direct drive provides more usable power from the 336 h.p. engine without sacrificing the advantages of the torque converter.

Structural Strength without excess deadweight is built into the S-18 for long service life when push-loaded by the biggest tractors. Simple, rugged construction

from push block to cutting blade results in lower maintenance and greater dependability.

Hydraulic Controls for all scraper operations—bowl, apron and ejector—eliminate the expense and down-time caused by cable breakage. All controls are fast acting and completely independent . . . permit controlled spreading of the load and non-stop dumping.

Out-in-the-Open Accessibility of all major components saves maintenance time . . . "package" disassembly helps get the machine back in production faster when repairs are required. Planetary drives and differential can be serviced without removing the wheels . . . engine, torque converter and scraper jacks are out in the open with easy access for servicing.

TWIN

SCRAPER



#### More work-ability than any other scraper

Twin-Power permits the use of two torque converters, each driving a separate axle, to handle big loads under adverse conditions. Maximum usable horsepower of each engine is always available. Either or both engines can be used according to job requirements.

All Wheel Drive enables the "Twin" to self-load in most scraper materials . . . to pull out of soft sand . . . climb steep grades . . . to work when other scrapers bog down. There's no limitation of a power proportioner because each drive axle has its own power train.

Big Capacity of the "Twin"—24 yds. struck—makes it a high production earthmover. Heaped capacity at 3:1 slope is 27 yds.—at 1:1 it's 32 yds. The three independent hydraulic controls for bowl, apron and ejector give fast, positive action . . . help cut cycle time . . . and there's no downtime due to cable breakage.

More Versatility helps beat the profit squeeze. The TS-24 moves the cheapest dirt on big jobs and small ones... on work that "can't be done with scrapers"... can work independent of other equipment or team up with the TC-12 "Twin" Crawler for the high speed, big yardage projects.

Exceptional Availability of the "Twin" is evidence of Euclid's years-ahead engineering that cuts downtime to an absolute minimum. Major components—engines, transmissions, converters, drive axles, hydraulic jacks—are easy to get to for servicing and maintenance.



EUCLID'S BIG 3 will give you a better Return on Investment.

Performance data on the TS-24 "Twin" Scraper, TC-12 Twin-Power Crawler, and S-18 Single Engine Scraper is available from your Euclid Dealer . . . ask him for facts and figures or a field demonstration.



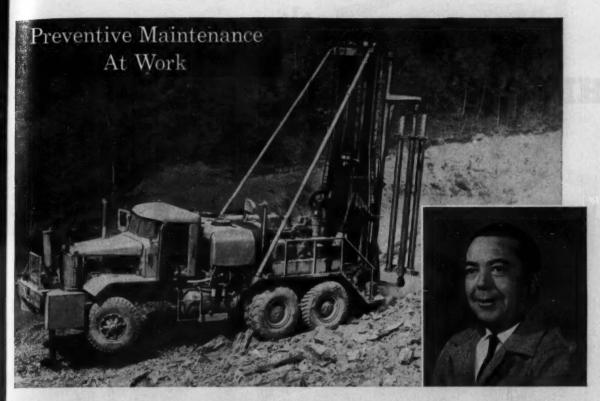
EUCLID

Division of General Motors Corp. Cleveland 17, Ohio



The ing control of the ing contr

Once Or Burg



"We've extended the time between air filter service from every 5 hours to once every 10 days—and run engines thousands of hours longer with Purolator Dry Type Air Filters"

says Mr. A. E. Burgess, A. E. Burgess Contracting Co., Inc., Birmingham, Alabama

The A. E. Burgess Co., Inc. is nearing completion of a program to install Purolator Dry Type Air Filters on all equipment because of their dramatic performance under the toughest road-building conditions.

Purolator Air Filters have drastically reduced down-time, and have extended the time between air filter service from once every 5 hours to once every 10 days.

On-the-job records also show that Burgess' 600 CFM Ingersoll Rand compressors had previously required an overhaul every 3,000 hours. Today, those same compressors, with Purolator Air Filters, have already run well over 4,000 hours without showing any need for an overhaul in the near future.

Similarly, the between-overhaul life of the 6-71 GMC diesel engine which powers the compressor has been greatly increased. Burgess records show that the two-stage Purolator Air Filter element (AF-1616) has extended engine use from 1,200 hours to an anticipated 10,000 hours.

Purolator Dry Type Air Filters are available in a variety of sizes to fit and protect all types of highway and off-highway equipment with effective air filtration under the severest dust conditions.

Without obligation, a Purolator Engineer will be pleased to demonstrate the greater advantages and economies of dry type air filtration . . . how to reduce costs through increased engine life, and reduced time and maintenance expense.

Write or call . . . or send for free literature today.

MAIL THIS COUPON TODAY!

Purolator Products Inc. Dept. 8-359 Rahway, New Jersey

Yes, I want more information about dry-type filtration for trucks and construction equipment.

Name\_

Company Name\_

Address

City.\_\_

Zone State

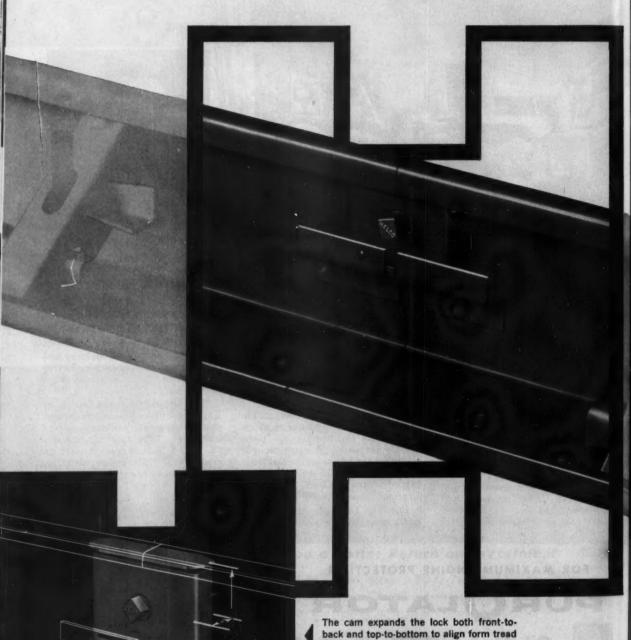
FOR MAXIMUM ENGINE PROTECTION

PUROLATOR

Oil, Air & Fuel Filters

PUROLATOR PRODUCTS INC. Rahway, N. J.; Toronto, Ontario, Canada

# HELTZEL'S NEW CAM LOKE



and face simultaneously.

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in

# TEEL FORMS!

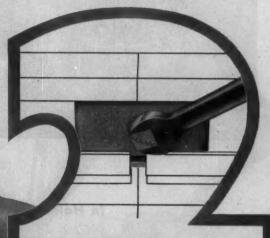
From steel form headquarters—revolutionary new highway forms that go together with absolutely rigid straight-line joints... faster, easier than ever before! They're HELTZEL'S NEW \*CAM-LOK STEEL FORMS!

Sturdily constructed on a simple cam principle, the new Cam-Lok slides easily into position. A fast quarter turn of the cam draws the treads of both form sections into alignment—with a joint that can't shake loose regardless of the vertical thrust of the machine weight or the horizontal thrust of spreader and finisher. An open and wrench is the only tool needed. There's no sledging with resulting tread and lock damage—no chance for misadjustment, and the simple cam mechanism is positively non-fouling!

There's more to these new Cam-Lok forms: Full channel stake pockets with angular wedges are stronger and insure better stake retention. They're available in the single or double wedge type with or without upturned flange base. Cam-Lok Highway Forms have a cambered base end and are available for radii forming.

AIRPORT FORMS, too, now come equipped with the fast setting, self-aligning new Cam-Lok. You'll want to know more about this great new idea in highway and airport forms. Write today for your copy of the Heltzel Cam-Lok Bulletin.

Tapered leads make the Cam-Lok easy to position. This feature also permits greater form-to-form flexibility while setting.



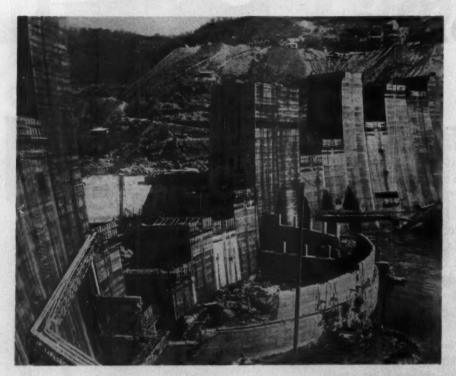
A fast quarter turn fully expands Cam-Lok aligning treads and holding them in alignment, until released.

\* Patent Pending



ORM AND IRON COMPANY WAREN OHIO

## Construction 'Round the World . . .



#### In Africa

Acrow forms, specially curfollow the structure's face, construction of Kariba Dam 400-ft-high arched dam wipound waters of the Zambes in Rhodesia. Dam will creservoir of 130,000,000 acrewater—more than four tim capacity of Hoover Dam's Mead, now largest in the

#### In Holland

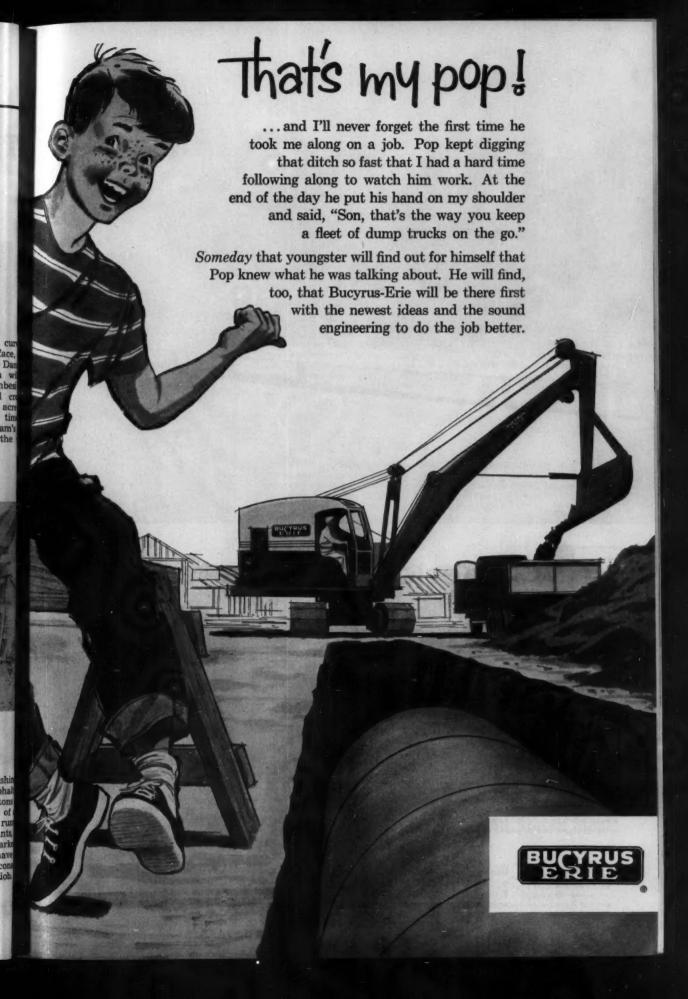
Odd-looking train puts down soilcement stabilization on a rural road at a rate of 2 mi a week with an operating crew of 20 men. The crawler tractor pulls a train consisting of a mixer-spreader, a compacting machine, a second mixer with heavy hammer tampers, and a water tank truck that carries a spraying boom trailing behind.



#### In Hong Kong

Electrically operated crushin and a "Starmix" 39 asphal plant turn out 120,000 tons of tic concrete for a new rum Hong Kong Airport. Plants factured by Frederick Park Leicester, England, have working for seventeen consmonths on the runway job

Page 76 - CONSTRUCTION METHODS and Equipment - March 1959





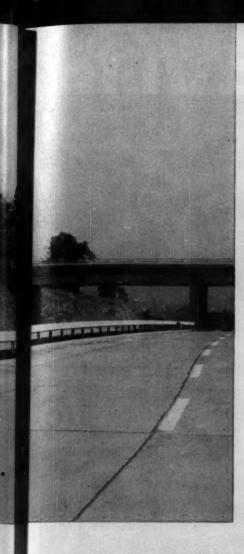


# American Bridge helps you bu



Structural steel is clearly the best bridge construction material. Manufactured to precise, long-established standards, steel combines both strength and toughness. Structural steel accommodates spans of any length. Its strength is inherent, predictable and permanent. It can be erected quickly throughout the year—can be accurately inspected at any time. Steel structures can be connected by any method, can be altered easily. Structural steel is clearly the best bridge construction material.

USS AmBridge I-Beam-Lok steel bridge flooring combines light weight; roadway rigidity; speedy, easy erection; matchless durability, and low maintenance. There are three types—5" open, 4%" and 3" concrete-filled, and 2" concrete-filled Tee-Type Sidewalk. Top-side erection eliminates scaffolding and forms. I-Beam-Lok provides an immediate working platform for men and equipment during erection. Over-all economy is the natural byproduct of the multiple savings in time, weight, bother and maintenance.





USS AmBridge Sectional Plate is the Ideal material for low-cost, rapid construction of large drainage structures. It is available in Pipe, Pipe-Arch and Arch Sections, in a wide range of standard sizes and gauges for various drainage requirements. Complete structures can be transported in one truck load, and the individual plates can be handled and assembled easily without heavy equipment.

USS AmBridge Highway Beam Guard Rail is designed to withstand high Impact forces. It possesses all the design features of the modern universal guard rail section adopted by most state highway departments, and offers several exclusive advantages that assure better service. Its quality, strength, ease of installation, controlled flexibility, high visibility, and low maintenance make USS AmBridge Highway Beam Guard Rail the finest traffic safe-quard available.

# build more road for the money



All American Bridge steel highway products meet the most rigid municipal, state, and federal engineering standards. All can be handled easily, installed quickly. All possess dimensional accuracy assuring precision fit in the field—by bolting, riveting or welding. Steel highway products can be installed the year round. No other construction material is so easy to extend, alter or inspect as steel.

All American Bridge steel highway products are readily available. An inquiry to any of the contracting offices listed below will bring catalogs and other desired information. Or write direct to Pittsburgh.

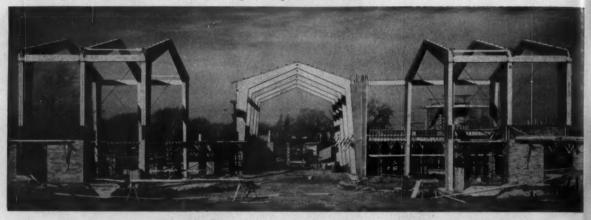
USS and I-BEAM-LOK are registered trademarks

# American Bridge USS United States Steel

General Offices: 525 William Penn Place, Pittsburgh, Pa.

Contracting Offices: Ambridge • Atlanta • Baltimore • Birmingham • Boston • Chicago • Cincinnati Cleveland • Dallas • Denver • Detroit • Elmira • Gary • Harrisburg, Pa. • Houston • Los Angeles Memphis • Minneapolis • New York • Orange, Texas • Philadelphia • Pittsburgh • Prattand, Orange, Texas • Trenton • United States Steel Export Company, New York

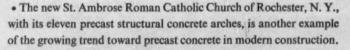
These soaring two-unit precast concrete arches are 36' high at mid-point and 42' wide.



# PRECAST CONCRETE ARCHES form basic structure for new church



Lehigh Early-Strength Cement concrete is poured in arch form at Goodstone Mfg. Co. yard. Completed arches were trucked 5 miles to job site.



The arches, each higher than a 3-story building and weighing 23 tons, were cast in two sections at the Goodstone Mfg. Co. plant.

In precasting these arch units, the manufacturer used Lehigh Early Strength Cement for maximum efficiency and economy. For example, forms were stripped and ready for reuse in 18 to 24 hours. And a faster production schedule cut labor costs an estimated 30%.

This is typical of the advantages of Lehigh Early Strength Cement in modern concrete construction.

# LEHIGH PORTLAND CEMENT COMPANY ALLENTOWN, PA.

Page 80 — CONSTRUCTION METHODS and Equipment — March 1959



Three of the four cranes required to position the arches. Note two workmen securing joint between 11½ ton arch halves.

Architect: Sanford Shanley, New York, N.Y.

Associate Architect: Raymond Ashley, Rochester, N.Y.

Consulting Engineers: Severud-Elstad-Krueger & Assoc., New York, N.Y.

General Contractor: Frank G. Maggio & Bros., Rochester, N.Y.

Manufacturer of Precast Arches: Goodstone Mfg. Co., Rochester, N.Y.



- . LEHIGH EARLY STRENGTH CEMENT
- . LEHIGH MORTAR CEMENT
- . LEHIGH PORTLAND CEMENT
- . LEHIGH AIR-ENTRAINING CEMENT

VERS

They verse whee job e

adva

versa compact digging handling

# OLIVER



VERSATILE OLIVER 770—a high-income earner at any job you give it throughout its vast work range. 50-plus h.p. gas or diesel. Mounts %-yd. loader and big choice of other attachments. Also, "Reverse-O-Torc" transmission with torque converter and clutch-free reversing for high-speed loading.

# **BIGGEST PROFIT MULTIPLIERS ON WHEELS**

Versatility! That's the big thing about these new Olivers. They have the most highly developed, richest rewarding versatility yet achieved. They're the surest thing on wheels for stepping up your job speed, job range and job earnings!

In every department you'll see important new Oliver advancements—in engine efficiency...work-hustling

traction...easy, instant control response...fast-action work attachments for any and all your jobs!

See the big jump ahead in tractor performance and earning power! Check the all-new Oliver fleet at your Oliver distributor's.



#### THE OLIVER CORPORATION

Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio

a complete line of industrial wheel and crawler tractors and matched allied equipment

VERSATILE OLIVER 550—has handy, compact size, yet handles surprising range of digging, loading, lifting, clearing, materials-handling assignments. Gas or diesel, independent PTO, oversized hydraulic system.

VERSATILE OLIVER 880—ablest of its class with ½-yd. trencher and 1-yd, loader. Clean, modern design—high-torque, 64 h.p. gas or 61 h.p. diesel...six forward speeds...rapid travel... simplified controls. Big-production loader has torque converter and finger-lip reversing.

VERSATILE OLIVER 900's—highest combination of power and performance. Three models for the work-matching power you want—Oliver 70 h.p. gas or diesel engine... GM 88 h.p. diesel and torque converter.







announcing T/M's new

# TITAN

a rugged new Trailmobile flat designed
around super-strong T-1 steel



Husky ''J'' shaped main rails are feature of new design that offers exceptional strength while eliminating unnecessary weight.

The Titan is available in conventional lengths up to 40 feet—with any kind of suspension.

# lighter! stronger! lower in price!

The use of brawny T-1 steel (105,000 lbs. tensile strength) in the main rails of this new Trailmobile achieves a new standard of performance for flat trailers. Weight has been cut by literally hundreds of pounds! In fact, this powerful all steel design all but matches the lightness of aluminum units.

Approximate weight is only 8500 pounds—so with a 72,000 pound gross vehicle weight the Titan gives you up to 50,000 pounds of payload capacity! And you get all this profit capacity in a trailer that costs less than any comparable steel or aluminum flat available today.

Further, the Titan will take tandem-tandem operation ... can be equipped with any kind of suspension (including a standard tandem, 9 foot spread, Trail-Level air-tandem or sliding tandem) . . . and it can be easily converted to an open top with the addition of light aluminum racks.

Before you buy any flat, look into the singular advantages offered by the new Trailmobile Titan. You simply can't get better performance—at any price.

TR-777

#### TRAILMOBILE INC.

Cincinnati 9, Ohio • Berkeley 10, Calif.
Springfield, Mo. • Longview, Texas

Underside view shows how I-beam cross members go through husky "J" shaped main rails. Note that cross members are welded in place at intersection points.



Stake pockets accommodate lightweight aluminum racks for easy conversion to open top. Inset sketch shows unique one piece design of rub rail that adds extra strength.



# Men blow up rocks to make room for a dam

B. F. Goodrich improvements in rubber brought extra savings

Problem: Those machines bore deep holes in solid rock with power from compressed air. Dynamite put in the holes will blow the rock to bits. It used to be that the rubber air hose on these machines would go to pieces, too. When heat from the compressor got into the hose, it would harden the rubber, breaking it into loose pieces that clogged the machine, put it out of action.

What was done: B.F.Goodrich engineers went to work on the problem. By

adding, subtracting, changing proportions of rubber, they found a special compound for the hose that stands heat without scorching or hardening.

Savings: Hose lined with this new rubber was made and put to work. On jobs where air hose used to go to pieces in weeks, B.F.Goodrich hose now lasts months, even years.

Thousands of feet of B.F.Goodrich

Thousands of feet of B.F.Goodrich air hose are in constant use on the \$98,000,000 Priest Rapids Dam project in Washington (pictured above). It's

doing dozens of different jobs, and lasting longer doing them, even though it's dragged over rough, jagged rocks, soaked in water, sometimes battered by flying pieces of rock.

Where to buy: Your B.F. Goodrich distributor has complete information on B.F. Goodrich air hose. And, as a factory-trained specialist in rubber products, he can answer your questions about all the rubber products B.F. Goodrich makes for industry. B.F. Goodrich Industrial Products Company, Department M-531, Akron 18, Ohio.

# B.F.Goodrich industrial rubber products

# Construction Methods AND EQUIPMENT

MARCH, 1959

VOLUME 41 . NUMBER 3

HENRY T. PEREZ, Editor

## Better Roadbuilding

THE HIGHWAY CONTRACTOR confronted with such problems as low volume and delayed awards and payments can take some small measure of satisfaction from the fact that he is not alone. That this is so is brought out in an American Road Builders' Assn. contractor survey, whose results have just been released.

The report contrasts contractor activity in 1954, when roadbuilders reported they were operating at only 46% of their capacity, with 1957. That year, despite a 45% increase in highway construction, contractors worked at only 62% of capacity.

According to a joint committee of the Associated General Contractors and the Construction Industry Manufacturers Assn., contractors are more optimistic for this year. July is the time at which the construction machinery now in the hands of contractors will be fully employed. In 1958, that point was not reached until September.

But operations a good bit below capacity are not the only thing bothering highway contractors. ARBA's survey indicates that there is an excessive time lag between bid opening and contract award. And this delay has run as high as three months. Many contractors suggested that the states could do much of their paper work before bids were opened, rather than after, to speed up awards.

Final payments, too, could be speeded. Contractors reported that in 59% of the states an average of more than 100 days elapsed between acceptance of the work and final payment. In three states it was more than 200 days. This contrasts with the roadbuilders' average estimate of 49 days as a reasonable time.

As usual, specifications came in for their share of criticism. Contractors in more than half the states reported that they were forced to use methods or equipment they would not have chosen themselves. This hampered most their compaction and bituminous and concrete paving operations.

The survey asked for suggestions as to what would help the contractor, make his work easier, and lower the cost of highways. A frequent suggestion was to give more authority to the field project engineer so faster decisions could be made. Others recommended that more and better trained highway department personnel be assigned to jobs.

None of these situations is going to change overnight, obviously. But by continually pressing for reforms in these areas, the highway contractor will gradually improve the picture. With this will come, we hope, increased profits. Equally important, and even more vital in selling the changes to those who must make them, is the fact that elimination of outmoded procedures will help reduce the cost of highways.



Faced with the job of constructing a new 800-ft square pier on the site of five existing finger piers, this contractor turned the congestion to his own advantage by using the old piers as working platforms.



OLD AND NEW-Existing finger pier serves as working platform for steam-powered Marion pile-driving rig. New concrete pier takes shape in between the old piers.

# **Old Piers Help Contractor Build**

NEW PIER 40 in New York harbor will be one of the most efficient ship handling piers in the country when it is finished in 1960. But right now it is featuring a different kind of efficiency —construction efficiency on the part of the substructure contractor, the Stock Construction Corp. of New York.

It's not an easy job for the contractor. The new pier is 800 ft square with a 55x140-ft extension at one corner. It will replace, and is superimposed on, existing Piers 37, 38, 39, 40, and 41, which are finger piers 800 to 1,000 ft long. It sounds like a congested site, and it is. But Stock has taken advantage of the situation by using the old piers as temporary working platforms.

The substructure of the new

pier consists of a prestressed concrete slab deck, resting on a poured-in-place concrete beam and cap system, all supported on steel H-piles driven through the overburden to rock. The prestressed concrete volume is 21,000 cu yd; poured-in-place volume is less than 12,000 cu yd.

The small volume that is poured on the job is spread among many beams so formwork represents a major part of the concrete cost. Stock has tried to make the concrete operations as efficient as possible.

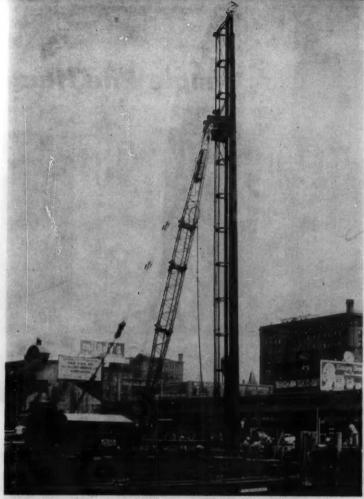
The elements can get rough, too, on the exposed Manhattan waterfront. This winter has recorded a 32-yr low mark for sustained cold weather.

The harbor itself does not freeze over during the winter, but ice from the upper Hudson River drifts in and hampers the movements of the job tow boat and the float stages on which the men work

The bottom of the cap forms, and occasionally even the bottom of the beam forms, are submerged at high tide. So Stock has to schedule forming operations with this in mind.

In spite of occasional interruptions of work caused by bad weather, Stock has worked right through the winter. They expect to finish their \$8.6-million substructure contract this summer.

When this phase of construction is complete, the dredging subcontractor, Great Lakes Dredge and Dock Co., will dredge a berthing trough 35-38 ft below mean water level around the wa-



DRIVING THE PILES—A Lima 803 crane with 108-ft leads is mounted on a barge to drive piles in between the old piers. Steam boiler on rear powers Vulcan hammer.

A Koehring 605 crane, mounting 85-ft leads and a Vulcan No. 1 steam hammer, handled this phase of the driving. To supply steam to the hammer, Stock attached a 55-hp boiler to the back of the Koehring. This rig handles the piles directly under the old piers and as many others as it can reach from the piers.

A Lima 803 crane with 108-ft leads and a Vulcan O hammer was set up on a barge to drive piles between the existing piers. The Lima has a 75-hp steam boiler attached to power the hammer. A second floating rig, consisting of a barge-mounted Marion 37 steam crane with 108-ft leads and a Vulcan O hammer, also drove piles in the slips between existing piers.

The other two existing piers are located outside the new pier and are not required for pile driving platforms. Stock laid out their pile assembly yard on one of them and their reinforcing subcontractor, Regal Contracting Co., used the other for prefabricating their work.

On the assembly pier a Koehring 605 crane unloads sections of the 14BP89 piles from the barges that bring them to the site. These sections are welded together to form piles up to 110 ft in length. The yard can handle 190 piles at one time. After welding, the piles are sandblasted and

## **New Pier**

ter periphery of the new pier. About 300,000 cu yd of material will be dredged out as well as the old wood piles from existing Piers 37 and 41.

#### Driving the Piles

Stock makes full use of the old piers as working platforms for their pile driving rigs. Their demolition subcontractor, Lehigh Salvage Co., first demolished the buildings and superstructures of the piers but left the timber decks intact.

Of the five existing piers, the three middle ones are within the perimeter of the new one. So Stock simply cut holes in the decks at the proper positions for the new piles so that the deck acts as a rough templet as well as a working trestle.



PREPARING THE PILES—Koehring crane transfers pile sections from barge to fabrication yard on one of the old piers. Sections will be spliced to form 110-ft piles.

coated by a subcontractor, Railroad Waterproofing Co.

The fabricated sections are loaded onto a barge and towed the short distance to the driving rigs where the crane drives the piles, A templet made of 12x12in. timbers is attached to the front end of the pile driver barge to guide the piles. The barge maneuvers itself into position with deck winches and cables attached

to the old piers.

About 20% of the piles are longer than 110 ft and must have an additional length spliced on after the first section has been driven. In such cases, the crew drives the first section until its tip is a few feet above water level. Then the crane places a second section on top. The second section is held in place with tack welds plus a special frame built of steel angle sections. This allows the pile driver to release the pile and move on to drive another pile while the welding crew completes the butt weld of the first pile. Then the crane returns to drive the spliced pile the remaining distance to rock.

Piles are driven to bedrock, the level of which varies considerably over the site and pile lengths vary accordingly from about 70 ft to 170 ft. Through the center of the site the rock surface dips sharply. It is in this trough, filled with glacial till, that the most difficult driving has been encountered, and this also is where the

piles are deepest.

A total of 3,500 piles, involving 350,000 ft of piling, will be

As part of the contract, Stock has to design, furnish, and install a cathodic protection system of 8.500 ampere capacity. When in operation, this system will ionize benignly the water around the piles thereby preventing chemical

corrosion of the piles.

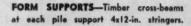
Stock engaged Carl Johnson, P. E., to advise on the design and installation of the system. Fischbach & Moore, Inc., were awarded the subcontract to install the system which was designed by their subcontractor, The Harco Co. of Cleveland.

The system will be put into operation after the superstructure is complete. It will be the largest installed cathodic protection system in New York Harbor for the protection of steel piles.

## Simple Pile Hanger



FORM HANGER-Truss-like frame over top of pile carries four vertical screw-in rods.





#### **Concrete Operations**

The concrete pile caps and the beams spanning the piles are poured monolithically. Stock developed an ingenious form hanger to support the forms from the tops of the piles during the pour.

Instead of trying to bolt or weld the form supports to each pile-a slow and expensive procedure-Stock designed a hanger that could be prefabricated in volume and simply placed on top of each pile. The engineering departments of Stock and the Richmond Screw Anchor Co. collaborated in the design and development of this hanger, which Richmond manufactures.

The hanger is a truss-like frame of steel alloy rods that fits over the top of a pile and is welded to four Richmond Tyscrus. The top rod in the frame rests along the top of the web of the H-pile. Screwed into the Tyscrus are vertical bolts from which the forms are hung. After the concrete pour has cured, the bolts are removed and the steel frame remains in the concrete cap.

No mechanical attachments are needed to hold the hanger on the pile. A workman simply pulls the bottom slightly apart to slip it over the top of the pile. When he releases it, the cage springs

back to normal position and holds itself tight against the pile. The weight of the formwork on the vertical rod causes a horizontal reaction at the corners of the cage and this compression is carried through the flanges of the pile. Each hanger has a capacity of 20

The hangers cost about \$3.50 each. Stock figures it would have cost twice that for any system of

bolt-on form supports.

On each side of the H-pile the vertical rods from the hanger support a pair of 4x10-in. crossbeams. These in turn support 4x 12-in. stringers stretching from pile to pile in pairs for the short spans and in double pairs for the longer spans. The stringers support the 2-in. plank bottom form of the pile cap as well as the 2-in. soffit form for the concrete beams.

The vertical forms for the pile caps and beams consist of %-in. plywood reinforced with 2x4 studs. Wales are made of pairs of 2x4's and the form ties are 1/2-in. Richmond Tyscrus. The insulation on the form panels for winter pouring is Cell-U-Form, manufactured by the Wood Conversion Co. of St. Paul, Minn.

It takes a lot of formwork to pour one beam. A complete beam, spanning the 800-ft width of the pier requires only about 260 cu yd

## Supports Forms





COMPLETED BEAMS—Concrete beams and pile caps are poured in place. Formwork represents about 75% of total concrete cost.

of concrete. This works out to 40 sq ft of form per yd of concrete. Forming labor accounts for about 75% of the cost of concrete on this job.

During winter pouring they cover the exposed concrete on top of the beam with a layer of straw topped with tarpaulins. This insulation, plus the Cell-U-Form, is sufficient to retain the concrete's own heat during setting; no extra heat is added. Stock doesn't pour when the temperature is below 20 deg. During the winter they pour about 250 cu yd per week.

The concrete comes to the site in ready-mix trucks. A Lima 802 crane with a 110-ft boom and a 30-ft jib handles a 1½-yd bucket that transfers the concrete from truck to forms.

#### **Prestressed Deck**

The pier deck consists of 6,000 prestressed concrete slabs, 1 ft thick, about 5 ft wide, and 20-25 ft long. Corbetta Construction Co. of New York and Precrete, Inc., have joint-ventured a subcontract to cast and place these slabs. The sides of the slabs are keyed so that they can be concreted together in place. An asphaltic concrete wearing surface will be placed on top of the slabs, except in office areas.

Up to now all the concrete work

has been over open water—that is, in the spaces between the old piers. When this work is complete, Stock will pour the beams over the old piers, using these old piers as working platforms and demolishing them as they go.

New Pier 40 is part of an extensive harbor modernization program that the Department of Marine & Aviation of the City of New York is undertaking. This pier, when complete will be leased to the Holland-America Line. Since 1870 the Department has built and leased piers on a self-liquidating basis. It now maintains 160 piers and waterfront structures stretching for a

distance of 570 shoreline miles in New York Harbor.

For the Department of Marine and Aviation, Vincent A. G. O'Connor is commissioner, Capt. Lewis H. Rabbage is chief engineer, E. J. Smith is deputy chief engineer, and Ray Woods is resident engineer.

D. P. Denitto is executive vice president of Roberts & Schaefer Co., Inc., design and supervising engineers.

For Stock, Gilbert M. Serber is president, George F. Flay, Jr., is chief engineer, M. Dorcic is general superintendent, Al Williams is project manager, and V. Nichols is job superintendent.

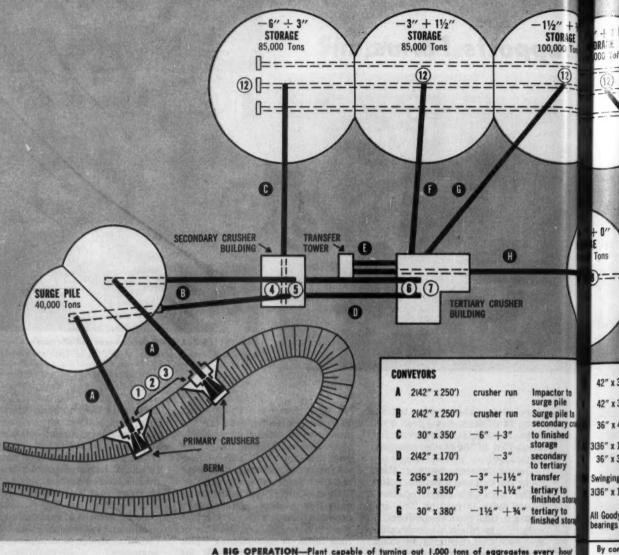
#### **Deck Slabs are Prestressed**



CASTING THE SLABS—Dumpcrete truck pours concrete into off-site prestressing bed.



PLACING THE SLABS—Crane lowers slab onto beams. Later, joints are concreted.



A BIG OPERATION—Plant capable of turning out 1,000 tons of aggregates every hour sprawls over 81-acre site. It provides crushed stone and send for all contractors on job.

# **Rock Cracks Up Serving State**

Here's a rock's eye view of how Channel Constructors, a four-contractor joint venture, produces all of the aggregates going into construction of the \$710-million Niagara Power Project in New York State.

By ANDREW BORACCI Associate Editor

#### YOU'RE ROCK!

For ages you've lain undisturbed a stone's throw away from the natural phenomenon of Niagara Falls in upstate New York. Then, one day, another phenomenon named Robert Moses decides that your number's up and you're

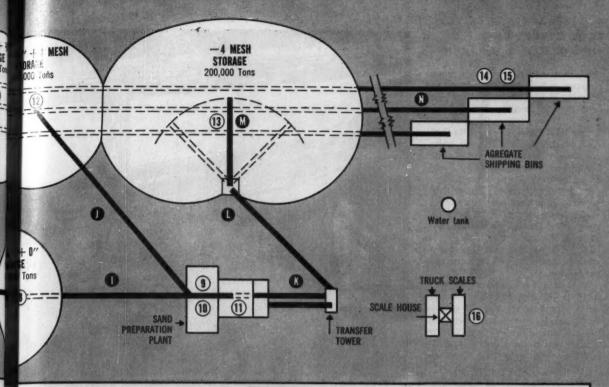
to join the ranks of minerals working for the state.

Contractors converge with men and machines on the land above you and push your earth cover out of the way to get construction of the vast \$710-million Niagara Power Project started. The earth gets a better break than you. It just gets pushed around a bit. But you're in for a shattering.

Vibrations shoot through the ground and warn you that your destiny approaches. Then, a blast sends you flying skyward and you come down on a pile of rock. You're now a 5-ft boulder, and you're on your way.

of cru

A power shovel picks you up and dumps you unceremoniously into a 20-yd Easton side dump pulled by a Euclid butane-pow-



42" x 360' —¾"	surge pile to sand plant
36" x 420' - ¾" + No.	4 sand plant to : finished storage
3(36" x 120')	transfer
36" x 360' -No. 4 +100	mesh transfer lowe to finished storage
Swinging boom	
3(36" x 1,500') all mixes	stockpile to

tertiary to

shipping bins

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All Goodyear belting (about 10,000 lin ft); Link Belt bearings and pulleys; Hewitt-Robbins idlers.

#### PLANT EQUIPMENT

- 1. Two contractor-built grizzlies
- 2. Two Rogers apron feeders
- 3. Two Cedarapids double-impeller impact crushers
- 4. Four Hewitt-Robbins 6x16 double-deck vibrating screens
- 5. Two 5½-ft Symons standard cone crushers
- 6. Six Hewitt-Robbins 6x16- double-deck vibrating screens
- 7. Two 7-ft Symons shorthead cone crush-

- 8. Sand surge pile tunnel
- Eight Hewitt-Robbins 6x16 double-deck vibrating screens
- 10. Two Allis-Chalmers 91/2x13-ft rod mills
- 11. Eagle screw classifiers and scalping tanks
- 12. Three reclaiming chutes under stock-
- 13. Six reclaiming chutes under stockpile
- 14. Three contractor-built 250-ton fivehopper aggregate shipping bins
- 15. Six Hewitt-Robbins screens over bins
- 16. Two semi-automatic 100-ton Buffalo truck scales

By completion of project, plant will have produced 2,130,000 tons of sand, 7,500,000 tons of crushed stone, and 2,900,000 tons of embankment filter material.

# at Niagara Power Job

ered tractor. You're hauled over your last mile as a 5-ft boulder. You arrive at your destination—a two-in-one aggregate plant sprawled over 81 acres of state territory. You know you're getting into something big.

Your haul truck grinds up a steep rock berm. You pass a sign that tells you the plant is being operated by Channel Constructors, a joint venture of Peter Kiewit Sons' Co., Perini Corp., Morrison - Knudsen Co., and Walsh Construction Co., a combine that also holds a large earthmoving contract on the project.

Among things the sign does not tell you is that you're to become part of some 7,500,000 tons of aggregates and 2,130,000 tons of sand that will become concrete in various parts of the project. Channel, under a contract to the N.Y. Power Authority, will provide you free to contractors needing you.

Your truck nears the top of the berm. You pass Channel's project manager, Lee Rowe, and plant superintendent Ray Condos, overseeing operations. Once at the top you get a good picture of the immensity of the plant. You see two of everything from crushers down to belts. And all boast the ability to turn out 1,000 tons of aggregates every hour.

Your side dump pulls alongside one of two Cedarapids double-impeller impact crushers. The side dump rises, and you fall into one of two huge steel hoppers. Your companions under 6 in. in size bang into a contractor-built grizzly that passes them under the crusher and onto a 42-in. conveyor that carries them 250 ft to a 40,000-ton surge pile.

You're 5 ft in size, though, so you pass onto a Rogers belt feeder that carries you into the crusher. Steel hammers pound at you, fling you against steel walls. Soon, you literally come apart at

#### ROCK CRACKS UP ...

continued

the seams. Within seconds your time as a 5-ft boulder comes to an end. You're nothing but a pile of 6-in, and smaller stones.

The crusher spews you out onto one of the two 42-in. belts that lead to the surge pile. All belts are Goodyear and they ride over Link Belt bearings and pulleys and Hewitt-Robbins idlers. You get a brief rest there. But within seconds you feel yourself being sucked downward. You land on another rubber conveyor that carries you through a 6-ft wide, 7-ft-high concrete tunnel up to a strange building 260 ft from the surge pile.

You drop over onto one of two 6x16-ft Hewitt-Robbins double deck vibrating screens. If you're lucky, and you measure between -6 in. and+3 in., you fail your screen test and are shuttled off on a 30-in. conveyor 350 ft to an 85,000-ton finished storage pile reserved for rocks of your size. But, pass your screen test and you're in for more beating.

You fall into one of two 5½-ft Symons standard cone crushers that grind you down still further. You come out of the cone crusher in sizes ranging from -3 in. to +1¾ in. You're dropped onto another 42-in. belt that carries you 170 ft to a tertiary crusher.

Again you pass onto a Hewitt-Robbins double deck screen. Again, if you're lucky and measure between -3 in. and +1¾ in., you're shuttled off by another 30-in. belt to a second 85,000-ton finished storage pile.

But drop through the screens and you enter one of two 7-ft Symons shorthead cone crushers that break you down still further. You come out in sizes under 1% in. Anyting left of you between -1% in. and +% in. drops onto a third 30-in. belt that carries you 380 ft to a third finished storage pile. If you're under ¾ in. you pass onto still another 42-in. belt that carries you 360 ft to a second surge pile. Make this pile and your identity as rock is coming to an end. You'll soon be nothing but sand.

You feel yourself being sucked downward again, and you drop onto another conveyor 42 in. wide that carries you through a second concrete reclaiming tunnel up to a sand preparation plant 360 ft away. There you hit a third set of Hewitt-Robbins screens that



send the -34 in. to 4 mesh particles of you onto one more conveyor to be dumped on a 100,-000-ton finished storage pile. Some of this size also is fed into a 91/2x13-ft Allis-Chalmers rod mill to be ground down to under 4-mesh size and, from there to enter one of four Eagle screw classifiers that removes excess fines. You join other-4 mesh material, sized through an Eagle scalping tank to remove material other than 4 to 200 mesh. From the classifier you fall onto a conveyor that carries your remains to a 200,000-ton finished storage pile.

You wonder where all the water that's washing you comes from? A huge 28-acre settling basin not too far from the plant provides the answer. The basin holds 65,000,000 gal of water re-

circulating at a 15,000 gpm volume provided by Allis-Chalmers and Fairbanks-Morse pumps.

Storage should be the end of the line for you-but it isn't. Parts of you are scattered over six storage piles. These piles stand in a long row, separated from each other by timber barriers. Under them run three parallel 6x7-ft reclaiming tunnels made from Commercial Shearing and Stamping's steel tunnel liners set over concrete inverts. When you're needed, an air-ram-actuated chute dumps you onto one of three 42-in. belts in each tunnel and you're carried 1,500 ft to one of three aggregate shipping

You fall onto one of three sets of six Hewitt-Robbins screens placed over each bin. These

#### **Boulders Suffer Speedy Metamorphosis**

FIRST A SHOCK TREATMENT—Easton side dump pulled by butane-powered Euclid drops 20-yd load of boulders into one of two Cederapids impact primary crushers.



THEN A REST CURE—Goodyear rubber belt conveyor moves 6-in. rock 250 ft to 40,000-ton surge pile where rock feeds onto conveyors that carry it to next crushers.



NEXT A BREAKDOWN—Secondary and tertiary crushers and sand plant discharge aggregates onto conveyors that transport the various-sized material to finished storage piles.

screens separate you into five different sizes and drop you into the five 250-ton hoppers contained in each bin. When a haul truck drives in under the bin and demands a load of aggregate, the bin operator actuates the air-ram chutes, and you fall into the truck.

Your truck passes onto one of two 100-ton Buffalo truck scales where it is weighed and registered. From there you go to any one of the many jobs on the vast project.

You're fed into a plant, you're mixed with water and cement, you're sent as a soggy mess to your final rest—still a stone's throw from the natural phenomenon of Niagara Falls.

You've started as rock, you've ended as concrete. You've given your all to the state. You matter now. You're functional.



AND JOURNEY'S END-Michigan loaders shovel aggregates from stockpile into I-H Payhaulers and Euclid trucks while conveyors are being set up in the three reclaiming tunnels.

Smart contracting demands attention to details both large and small. A case in point is this Florida job, where contractor-developed items range from a huge gantry (right) to a plastic sock to prevent loss of grout when sealing joints in concrete sheeting.

> By HENRY T. PEREZ Editor



BAY CROSSING—Floating plant pours pier cap as second rig sets sheeting.



BRIDGE-TOP GANTRY—Spanning 100 ft between piers, rig hoists 42-ton prestressed

# Miami Causeway Sparks

BISCAYNE BAY is a shallow body of water separating Miami from Miami Beach. And in bridging this 3-mi gap, Heavy Constructors Inc, has developed construction innovations that, in their way, rival the resort area's fabulous hotels.

Most spectacular of the Ft. Lauderdale contractor's developments is a high-flying 100 - ft gantry that places 42-ton prestressed concrete stringers. But probably more important to the over-all success of the job are such items as:

Ingenious piledriving templetsPlastic "sock" grout retainers

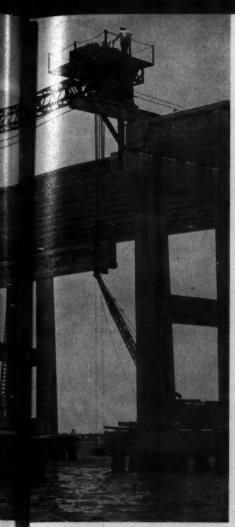
• Floating steel wales

The bay crossing, known as the 36th St. Causeway, will consist of a number of bridges connecting a series of man-made bulkheaded sand islands. Two of the bridges are major crossings. Together they involve thirty-two 65-ft spans, eleven 98-ft spans, and one 130foot steel girder span.

The 65 and 98-ft spans each consist of 14 lines of prestressed concrete stringers. Short units are 16x48 in. and weigh 17 tons. The 42-ton 98-footers are 20x54.

Heavy Constructors figured, correctly, that they'd have no difficulty setting the 17-ton stringers with their barge-mounted Wiley Whirley. But handling the 42-ton units with floating equipment is another matter. And there are 154 of them to be placed.

Two rigs cannot maneuver properly in the space available, so one crane would have to tackle



98-ft stringer from its delivery scow. The lack of space precludes erection with crane.

## Innovations

the job alone. And it would need 125 ft of boom. Then, too, the barge would be subject to wave action. With such a long, heavy load swinging from the stick, it would not take much unexpected stress to collapse the boom.

Rather than risk the calamity the contractor set up a gantry that rides rails atop the bridge. Rails are mounted on girders that extend transversely across the bridge and cantilever out on one side. One girder is clamped to the tops of previously set stringers; the other to the next pier cap.

The gantry spans between rails and rides on four doubleflanged wheels. Its single trussed frame is sway-braced and hogrodded. And near each end it carries a Chrysler-powered Park-

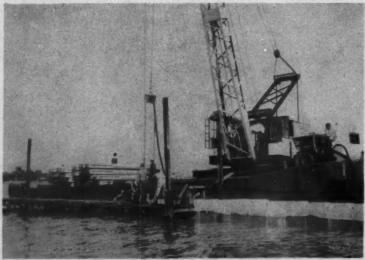


PRESTRESSED STRINGERS—Heisted by winches at each end of gantry, stringer is 20x54 in. in section. Fourteen of them make a complete span 86 ft wide for two 36-ft roadways.

#### **Templet Guides Sheets**



SETTING SHEETPILING—Pile templet (on deck above and in use below) helps contractor install 5½ mi of bulkhead sheeting. Pontoon feet on templet's spud legs reduce submerged weight and keep unit from burying. Orton crane handles concrete sheets and jet.



## MIAMI CAUSEWAY...

continued

ersburg hoist that handles the stringers through an eight-part line. Two Beebe hand winches move the gantry transversely.

To erect a span, a floating crane first moves rails and gantry ahead. Then a tug maneuvers a scowload of stringers under the cantilevered end. The gantry runs out on the cantilever, heavy frames hooked to its hoist-blocks are fitted around a stringer, and up she goes.

When the rig has raised the stringer clear of the pier caps, workmen winch the gantry into position to lower the unit to seats.

#### Bulkheading

Heavy Constructors also shows great ingenuity in building the bulkheads that will retain sand fill for the causeway's man-made islands. Bulkheading involves driving prestressed concrete sheetpiling and anchor piles, connecting them with prestressed tie beams, and capping both wall and anchors with poured-in-place concrete.

Sheetpiles are all 30 in. wide and vary in length from 12 to 26 ft. Thickness is either 8, 10 or 12 in. Respective sheets are pretensioned by ten, twelve, or sixteen 7/16-in. strands loaded to 18,900 lb each.

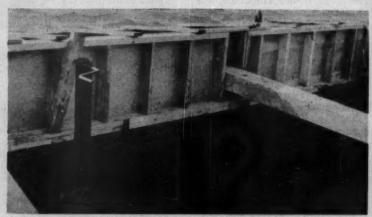
The concrete sheetpiles are tongue-and-groove type; a 2%-in.-deep tapered groove accommodates a 2-in. tongue. However, the top 6 or 9 ft of each pile is a splined type; both edges of the sheet are grooved, and the resulting 4¼-in. hexagonal pocket between adjacent sheets is later grouted. This makes the upper part of the wall absolutely tight and prevents loss of sand fill.

The job calls for nearly 5½ mi of bulkhead. And this involves placing some 11,000 pieces of sheeting totaling more than 30 mi in length.

#### **Pile Templet**

To set sheetpiles fast and accurately, Heavy Constructors built a long rectangular templet supported by a spud at each corner. Its two longitudinal members are steel trusses bolted to cross-members at each end; the rear cross-

continued on page 101



FORMING BULKHEAD CAP—Steel hollow-box wale supports side forms and acts as bottom form. Because it floats, wale can be dropped in water to move under tie beams.



PROJECT PAYDIRT pays off for you again

# ISIG NEW CAT No. 14 TURBOCHARGED MOTOR GRADER

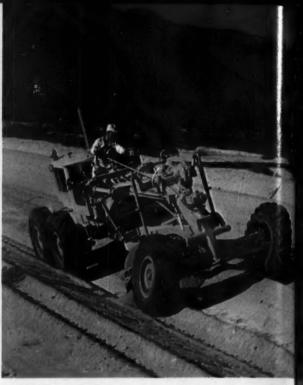
Most versatile big grader ever developed, recommended for everything from the roughest jobs to the finest grading!



PROJECT PAYDIRT: Caterpillar's multimillion-dollar research program—to meet the continuing challenge of the greatest construction era in history with the highest production earthmoving machines ever developed.



MAINTAINING HAUL ROADS, the No. 14 pays off with high capacity and high availability on the toughest construction jobs. It has the power to handle heavy material at speeds that won't interfere with hauling units!



DITCHING AND SPREADING, the No. 14 pays off with high production in this most demanding work. When working in fill areas, you can also use it to advantage spreading subbase and fill!

## BIG, VERSATILE No. 14 PAYS OFF WITH HIG

In the new No. 14 Series B, Caterpillar brings you the most versatile motor grader ever developed in the "big machine" field. It is the one big grader that delivers high capacity both on the roughest and finest grading work. Another major achievement in Caterpillar's "Project Paydirt," it answers the contractor's need for a unit that comes through dependably with higher, faster, lower-cost production on today's big jobs.

The first and only Turbocharged Motor Grader, the No. 14 packs 150 HP (rated at sea level). Weighs in the 30,000 lb. class. Operates at the highest practical

working speeds with either a 12-ft. or 14-ft. moldboard. Has a turning radius of 36 ft. And with all this power and heft, it has the extra strength to deliver the high availability for which Cat Motor Graders are famous.

In the new No. 14 you'll find the latest engineering advances developed by Caterpillar research. Example: new design permits increased clearance between moldboard and circle for greater loads. You'll also find exclusive time-tested Caterpillar developments. Example: the oil clutch. All of these many features, some of which are listed here, pay off in this one fact:



NEW DRY TYPE AIR CLEANER. Most efficient air cleaner ever developed. Removes 99.8% of all dirt from intake air during every service hour. Can be serviced in five minutes. Cuts maintenance time (by as much as 70%) and costs. Extends engine life.



TURBOCHARGED CAT ENGINE. First and only Turbocharged engine ever offered in a motor grader. Of job-proven design, it is ruggedly built for a long life under severe working conditions. all Caterpillar Engines, its high torque rise (18%) pays off on the job.



NEW TURBOCHARGER. Close-up of the Cat Turbocharger, which greatly increases over-all engine performance. Turbocharger utilizes waste energy from engine exhaust to step up efficiency and economy. Fuel system permits use of economy-type fuels without fouling.



IMPROVED MECHANICAL BLADE CON-TROLS. Standard on the No. 14. Improved design increases speed of response 25%. Controls provide precise blade adjustment, reduce kickback, ease engagement. "Anti-creep" lock makes blade stay put under load.

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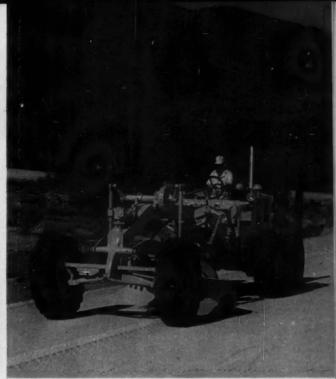
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BANK SLOPING, the No. 14's low center of gravity and broad 8-ft. base pay off in superior blading and machine stability. An operator can work with confidence on steep slopes—and maintain high production on them L.



FINISHING, the No. 14 pays off with maximum efficiency on fine or rough work. With the new transistorized Preco Automatic Blade Control, it controls blade slope within 1/6 in. in 10 ft.—cuts fine grading time as much as 50%.

### HIGH CAPACITY ON EVERY GRADING JOB

You can use the No. 14 profitably on many different applications such as:

-power applications like heavy grading, heavy ditching, rough grading and bank sloping.

-control applications like light spreading, surface maintenance, fine grading and light blading.

As a result, you don't have to pick "spots" to make the No. 14 pay off for you. This all-purpose grader will earn its keep on every application with high capacity and low operating cost. But see for yourself. Get the complete facts on the big new No. 14 from your Caterpillar Dealer. Go over it on his lot-watch it work on your job. Say when and where-he'll demonstrate!

#### 

All around . . . . . 14.00-24 (10 ply rating)
Travel speeds: 6 forward, 2 reverse . . 2.6 to 21.6 MPH



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RECO AUTOMATIC BLADE CONTROL.

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AMPLE THROAT CLEARANCE. New design permits increased clearance between moldboard and circle for greater loads. Extra strength is built into frame, drawbar and circle to match engine power, absorb punishment of rough work and assure accurate blading in tough going.

14.00-24 TUBELESS TIRES. All way around—all tires mounted on 10-in,-wide rims to stiffen tire side-walls and reduce tire "roll." Large tires on front end improve machine stability.

POWER STEERING AND POWER BRAKES. Both provide the fast, positive response that gives an operator complete confidence to tackle tough jobs: Ease of operation helps him maintain high production anywhere.

UNEQUALLED VISIBILITY. Dash-mounted lift gears and low frame design provide clear visibility. An operator, while seated, has an unobstructed view of critical areas at the front wheels, toe of the blade and circle. Convenient in-seat starting is another No. 14 plus.

EXCLUSIVE OIL CLUTCH. Most advanced clutch design in the industry. Provides up to 2,000 hours' service without adjustment, the equivalent of about 12 months of "adjustment free" operation. Virtually eliminates down time for clutch repair.



# How Project Paydirt pays off across the board for you in the only complete earthmoving line



In the No. 14, you have just seen one of many achievements of Caterpillar's multi-million-dollar research program. This program is responsible not only for developing new machines like the No. 14, but also for improvements in every current model—Tractors, Scrapers, Traxcavators, Motor Graders and other earthmovers.

That's why, when you invest in a Caterpillar machine, you can count on it for unmatched performance in its class. It's a modern, heavy-duty unit that pays off where the chips are down—on the job. Here's the line-up at your Caterpillar Dealer to help you to more profitable earthmoving. Besides the No. 14, it includes the No. 12 and No. 112 Motor Graders and the following:



FIVE TRACK-TYPE TRACTORS: Spearheaded by the "take-charge" D9 (320 HP), there's the new D8 (225 HP), D7 (128 HP), D6 D4 (63 HP). (All are flywheel ratings.) Plus

(93 HP) and D4 (63 HP). (All are flywheel ratings.) Plus a complete selection of 'dozers (including the No. 7G Bulldozer), rippers, tool bars and tool bar equipment.



THREE TRAXCAVATORS: These front-end loaders provide a range of capacities that meet every purpose—No. 977 (2½ cu. yd. 955 (1½ cu. yd.) and No. 933 (1 cu. yd.).

bucket); No. 955 (1½ cu. yd.) and No. 933 (1 cu. yd.). All can be equipped with the exclusive Side Dump Bucket, or other quick-change attachments—special buckets, teeth, bulldozers or forks.



THREE WHEEL-TYPE TRACTORS: The two-wheeled DW21 (345 HP, max.), the four-wheeled DW20 (345 HP, max.) and DW15

(200 HP, max.) team with matching LOWBOWL Scrapers for high production: the No. 470 (19.5 cu. yd. struck), No. 482 (24 cu. yd. struck), No. 456 (19.5 cu. yd. struck) and No. 428 (13 cu. yd. struck) respectively. Four Cat 4-wheel Scrapers are also available: Nos. 491 (27 cu. yd.), 463 (18 cu. yd.), 435 (13 cu. yd.), and 60 (7 cu. yd.), all struck capacity. And Athey Wagons couple with Cat wheel type Tractors for rear or bottom dumping.

Your Caterpillar Dealer is headquarters for the most productive earthmoving equipment line in the field. He's a source of reliable information and service. See him today!

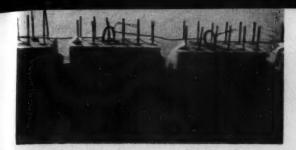
Caterpillar Tractor Co., Peoria, Illinois; San Francisco, California, U.S.A.

## CATERPILLAR

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Diesel Engines • Tractors • Motor Graders • Earthmoving Equipment





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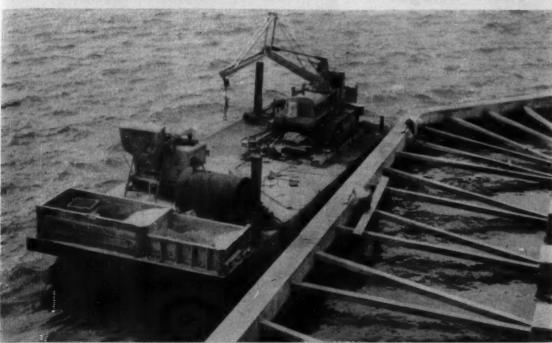
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MIAMI CAUSEWAY . . . continued from page 96

#### **Splines Key Sheets**

PLASTIC SOCKS—Polyethylene bags filled with grout act as splines between concrete sheetpiles to make bulkhead wall tight.



GROUTING BARGE—Anchored by spuds alongside completed section of bulkhead, rig carries water tank, Rex 85 mixer, Trackson

crane on International TD-9 tractor, and Ingersoll-Rand 125-cfm compressor. Prestressed 6x8-in. beams tie wall back to anchor piles.

member is yoked up to fit over previously driven sheetpiling. Different bolt spacing lets the templet accommodate different thicknesses of sheeting.

Templet cross-members frame into sleeves that encircle H-pile spuds. And hand crabs at the templet corners are cabled to spud tops to adjust for elevation and level, after which the sleeves are pinned off.

A prime templet innovation is that the bottom of each spud pile terminates in a hollow steel 4-ft-square box 2 ft deep. The water-tight boxes not only act as spread footings to keep the templet from sinking into bay bottom but also lighten the unit by displacing some 4 tons. (Similar box feet hold bearing-pile templets.)

A barge-mounted Orton 40-ton crane handles the templet, the sheetpiles, and a hairpin jet that sinks them to grade in the bay-bottom sand. Jet water comes from a Hale pump at 300 psi. As the sheetpile sinks, a 1-ft 45-deg

chamfer at its tip's leading edge forces the pile back tight against its neighbor.

#### Plastic Sock

After the sheeting is in place, the top pocket between adjacent units is grouted to act as a spline. Both to prevent wasting grout through leakage and to eliminate a tremie operation, Heavy Constructors devised a polyethylene "sock" that fits in the slot and is filled with cement mortar.

Early in the job the plastic bag was slipped over the end of a length of Neoprene 2-in. grout pipe, the assembly was bottomed in the pocket, and then the sock was pumped full. Now, however, a handful of mix merely placed in the bottom of the bag sinks it in the slot, and the rest of the grout is poured in.

#### Floating Steel Wale

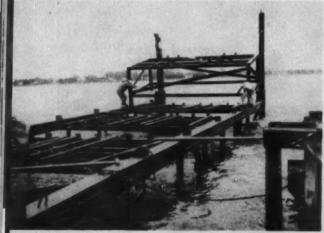
A concrete cap tops the line of sheetpiling, extending beyond it both front and back. To form the cap for pouring, the contractor devised a dual-purpose unit that acts as the bottom form and also supports the side forms.

The device is a hollow steel box-section wale made of two 12-in. channels held 14 in. apart by top and bottom continuous coverplates. Coverplates are welded solid and the box ends are closed to make the unit watertight and able to float. A bit less than 50 ft long, the wale extends along a 20-sheet stretch of bulkhead.

Wales are bolted in pairs, front and back, to the line of sheetpiling. Holding them at the correct elevation to act as soffit forms for the cap are 1/8-in. bolts. These extend through slotted sleeves in the wales and through holes drilled through the joint between sheets.

Side forms for the outside face of the bulkhead cap are steelframed plywood panels. Because of variations in spacing of the 6x8-in. tie-beams that connect the wall with its anchor piles, rear

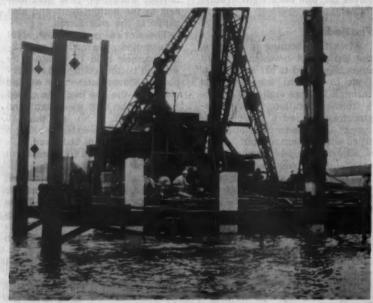
### Templet and Form Speed Bridges



PILE TEMPLET—Two-level unit spots all 42 piles for pier foundation, Here, first of four top sections is set on continuous bottom. Pile guides are 4-in. XH pipes.

COLUMN FORM—Assembled on ground, pier unit is 4-in. plywood in welded channel frame. Channel yokes are pinned at corners for stripping form in one piece.





PILE HAMMER—A Vulcan O drives 20-in. prestressed bearing pile, one of 1,200 required totaling 48,000 ft. Like sheeting templet, this one's spuds have pontoon feet.

panels are plywood framed with 2x4's.

Both types of forms rest on the steel wales. Short, extended angles welded to the wales keep the lower part of the side form from kicking out; crank-handle bolts through other, longer angles plumb and hold the top. Crossnailers complete the form assembly.

To strip a form, wale bolts first are loosened and side panels removed. Then the wales are dropped into the water to float ahead to the next pour. Without this floating feature, of course, the rear wale would have to be in much shorter lengths so it could be lifted out from beneath the tiebeams.

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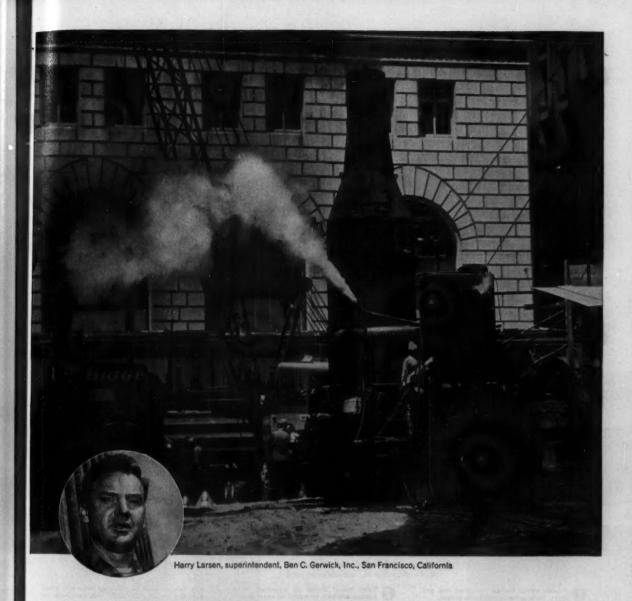
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Running the job for Heavy Constructors is John R. Bailey, general superintendent and manager. Milt Cannon is field superintendent and Joe Rice is project engineer.



# UNION'S STEAVAL STEAM CYLINDER OIL ...for maximum protection

"When we used Union's Steaval steam cylinder oil in our steam hammers on the Richmond-San Rafael bridge job, we found it eliminated many common difficulties — particularly those which resulted from wear.

"Since then we've used Steaval consistently on all our steam hammer jobs, including the one pictured here—driving the steel bulkheads at the site of Crown-Zellerbach's new San Francisco office. The results have been excellent."

Red Line Steaval Oils are compounded from the finest stocks to assure exceptional stability, correct atomization, good wetting action, maximum sealing and lubrication. Their ability to lubricate in the presence of moisture gives protection to sliding surfaces, miscellaneous gear boxes, babbit and bronze bearings common to equipment employed by almost every industry.

For information on the proper grade of Steaval for maximum protection of your equipment contact your nearby Union Oil representative, or write to Manager of Direct Sales.

# OF CALIFORNIA



Union Oil Center, Los Angeles 17, California, U.S.A.

# Can you imagine a more to load...unload

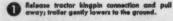


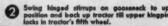
Construction equipment gets bigger, harder to load and certainly more costly. So what better reasons are there to choose the fast, safe and simple front-end loading and unloading provided by LACROSSE Removable Gooseneck Trailers.

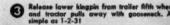
First, consider LaCrosse Removable Gooseneck design: both ends of the gooseneck have standard kingpin and fifth wheel hook-up . . . fool-proof, positive locking so familiar to everyone. This design —without the use of winch, power or hydraulic attachments—permits loading and unloading to be

accomplished in the three safe and simple steps illustrated below.

Important, too, running gear and brakes on these Removable Gooseneck Trailers are LaCrosse designed, engineered and manufactured . . . your assurance of generous overload strength and support. Units available with capacities of from 25 to 75 tons payload. Options of flat deck, drop side deck or beam deck design. Two and three axle models. Get the full facts from your LaCrosse Dealer or write for the brand new brochure No. RG-2560.











TRAILER CORPORATION

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# resafe and Simple way and transport?







OVER ALL LOG HANDLING
JOBS IN MILLYARD
REPLACES FIVE MEN...
THREE MACHINES

Millyard costs are being sharply reduced by this giant fork truck built by R. G. LeTourneau, Inc.-the versatile Electric Log Stacker. 25- to 50-ton truck loads are unloaded in a single bite!

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Powered by Electric Wheels, the Stacker moves swiftly across muddy, rutted millyards to keep log moving – decking the logs, sorting them, feeding the mill. With its drive and all its work functions



TRANSPORTER self loads and unloads pipe in West Texas desert. All-wheel Electric Drive and huge soft tires deliver tremendous traction and flotation to carry 30-ton loads thru soft sand.



CRASH PUSHERS clear 200-ton damaged aircraft from military runway in minutes. Infinite gradations in power control of Electric Wheels gives imperceptibly smooth application of power.



MOBILE CRANE. All functions independently powered by electric gearmotor. Electric Wheels, boom swing, line place all DC powered. Regenerative brain holds all functions at exact selected specific process.



5-year performance proves reliability and efficiency of Electric Drive by R. G. LeTourneau, Inc.

Five years on many different jobs have established the Electric Wheel by R. G. LeTourneau, Inc., as a major advance in prime movers. This self-contained power package is giving an outstanding performance in hundreds of this company's products now serving many industries, including logging, transportation and construction.

In the Electric Wheel, a high-torque DC electric gearmotor is mounted inside the rim of each wheel, eliminating the power losses of mechanical or hydraulic power-transfer systems. A diesel-electric generator supplies power to the wheels, all of which drive. Aiding traction and smooth operation is the automatic transfer of power to the wheels with best footing, and an infinite range of power control from zero to full speed.

The Electric Wheel is just one part of this proven system of diesel-electric power and control. Steering, braking, other work functions, are all electric powered by thoroughly tested components, all of which we make ourselves. This assures dependable performance and allows new freedom to design machines to do the job you want done.

NOW IN EARTHMOVING

A number of new earthmoving machines with all-wheel electric drive — one type shown below — have now been built for the BIG jobs in construction and mining. For information please write 2395 South MacArthur, Longview, Texas.

dectrically powered at the point of action—and controlled by simple fingertip switches—this agile plant and its single operator have replaced five the nen and three machines in the average millyard. The last histories showing the reduction in operating costs are available on request.

Similar increased productivity is now available earthmoving and mining contractors, too.



### R.G. ETOURNEAU INC

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PFSHORE DRILLING PLATFORM raises and owers itself 1 ft. per minute allowing stest re-location in industry. All comments of leg driving mechanism built sclusively by R. G. LeTourneau, Inc.



DC Motors for Electric Drive machines are designed and built exclusively in our own plants. They are an integral part of Electric Power and Control System developed by R. G. LeTourneau, Inc.



EARTHMOVING EQUIPMENT. K-100-Ton Tractor is rubber-tired goliath for general use. 600 hp diesel-electric generating system drives Electric Wheels. Write for information on this new equipment.

# 3 to 10 times longer life!

# INDUCTALLOY AXLE SHAFT

Eaton Inductalloy Axle Shafts, hardened by the Eaton induction hardening process which produces an extremely hard case that extends deep into the material structure, are able to handle more pounds of torque without fatigue failure. The result is extra thousands of trouble-free miles added to axle life, more vehicle time on the road—less in the shop, and reduced maintenance expense.

The superiority of Eaton Inductalloy Shafts is performance proven by millions of miles of heavy duty operation. Ask your dealer for complete information.





SHAFT





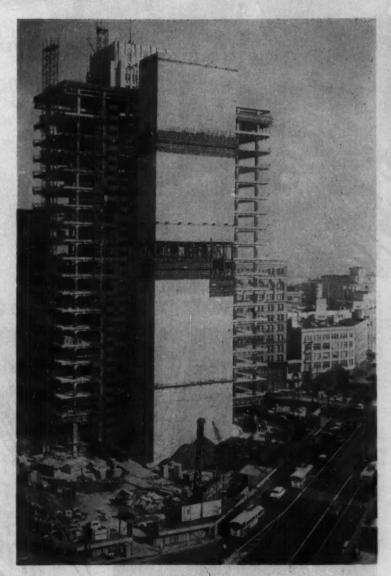
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PRODUCTS: Engine Valves \* Tappets \* Hydraulic Valve Lifters \* Valve Seat Inserts \* Jet Engine Parts \* Hydraulic Pumps
Truck and Trailer Axles \* Truck Transmissions \* Permanent Mold Iron Castings \* Automotive Heaters and Air Conditioners
Fastening Devices \* Cold Drawn Steel \* Stampings \* Forgings \* Leaf and Coil Springs \* Dynamatic Drives and Brakes
Powdered Metal Parts \* Gears \* Variable Speed Drives \* Speed Reducers \* Differentials \* Centralized Lubrication Systems

# Improved Methods Are Routine On This Building Job

- They sluice backfill behind sheet piles, then pull the piles with heavy steel tongs
- They pour concrete into three sets of special wall forms
- They support interior forms with steel strapping ratcheted tight
- They move workmen up and down with a three-stage man-lift.



A LOT of ingenuity is going into construction of the 20-story Crown Zellerbach Building in San Francisco.

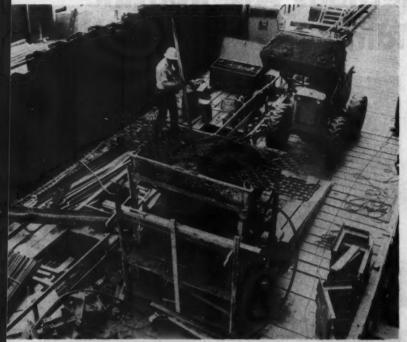
The building occupies only about one-third of the land area of a triangular plot in the heart of the city. Its office tower is 62 ft wide and encased in glass; behind the tower stands the utility core that will have solid concrete walls brightened by a mosaic tile covering.

Haas & Haynie, Inc., the general

contractor, and several of the subs on the job have put to work some unusual construction tools to speed the job. They backfilled 7,000 yd of material behind the perimeter retaining wall of sheet piling with a job-built rig that handled the entire job from six positions.

They pulled the sheet piles with a tong mounted on an A-frame that recoverd 90% of the 650 L. B. Foster sheet piles without damage. They are concreting the wails of the utility core at three levels simultaneously with three sets of special forms. They wrap both column and beam forms with steel strapping to save putting in vertical shoring and braces. And they are operating a three-stage manlift that gets them an extra hour's work each day from men on the upper floors. They even have polyethylene plastic panels protecting workmen on floors from the cold.

#### IMPROVED METHODS ... continued



BACKFILL—Michigan loader moves up to home-made sluicing rig that will mix almost pure sand fill with water and sluice it down chutes to backfill behind sheet piles.

#### Sluicer Backfills; Steel Tongs Pull Out Piles

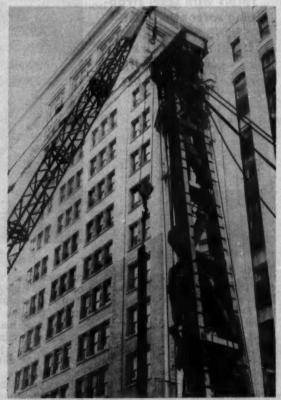
Backfilling is a neat operation. A Michigan loader dumps almost pure sand fill into a pair of hoppers set on a jury rig. Manually operated gates feed fill into a trough. A jet of water sluices the fill down a series of chutes and into the narrow space between building walls and sheet piles. Wellpoints suck the water out of the fill.

The tong next goes to work. Ben C. Gerwick Co., H&H's sub-contractor, rated it at a 50-tcn capacity. But Gerwick frequently loaded the tong in excess of 100 tons. Grip is such that little damage is done to pile face making percentage of recovery high.

continued on page 114



READY—Heppenstall tong, a standard tool at steel mills, drops into position over pile. Tong is suspended from an A-frame mounted on a skid rig that operates with an 8,000-lb winch.



PULL—Skid rig and tong pull pile partially free. Skid rig has limited boom length so pile must be transferred to a crane that completes the retraction then places pile on truck for removal.





### BIGGER BRIGHTER

Dietz VISI-FLASH

No. 697

Large double-faced 7" lens provides brilliant flashing light to both sides - no blind spots. Operates on 1 or 2 batteries with life of 750 hours each. When used as a single direction light, polished aluminum reflector doubles brilliance.

#### Use the DIETZ 3-way **Hazard Warning System**





what the hazard is.

Dietz Flare Torches fully illuminate danger in any weather. Burn over 40 line hazard boundaries. alert approaching traffic.

Show exact location, extent and boundaries of trouble-free flashers on hazard area, Burn bright- the market. The Visi-flash hours on low-cost kero- by and steadily up to 75 warns: "danger ahead."

Use Dietz Torches to show Use Dietz Lanterns to out- Use Dietz Visi-flashes to

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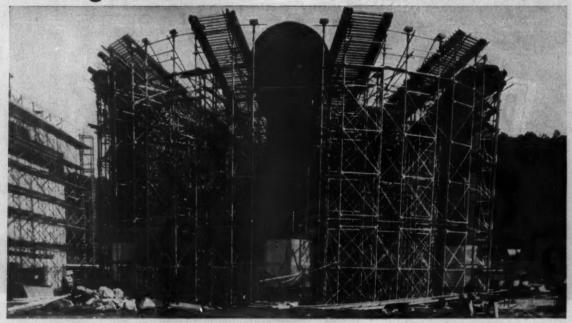
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#### Shoring Methods . . .

#### by Patent Scaffolding Co.



### Extreme Load Bearing Problem Solved With PS Co. Shoring

at Yankee Atomic Electric

JOB LOCATION—New 134,000 kilowatt atomic energy producing electric power plant for Yankee Atomic Electric Company, Rowe, Mass. Cost estimated at \$50,000,000. Scheduled for completion in late 1960. Now in construction. See artist's sketch of finished plant.

ENGINEERS AND DESIGNERS—Stone & Webster Engineering Corporation and Westinghouse Electric Corporation.

**CONSTRUCTORS**—Stone & Webster Engineering Corporation.

PROBLEM—What type of shoring to use to support at considerable height above grade a superstructure forming the base and shield around atomic reactor section of the plant—see elevation view diagram.

Factors to be considered were these: 1—The outer concrete shield for the reactor section, measuring 82'6' in diameter, consists of a conical shaped bottom slab averaging 5' thick; 2—This slab is in turn supported by the circular inner and outer walls above the slab. These walls are 5' wide by an average height of 16' above the slab; 3—The massive circular walls are to be poured monolithically with the slab, since they act as beams which, after developing sufficient strength, support the conical slab between the columns.

SOLUTION—PS Co., working closely with Stone and Webster, devised the load bearing engineering factors to be met by the shoring equipment. These included—shoring must be erected to 30'-high at the low point and 50'-high at the high point. Shoring must be spaced to carry a maximum load of 21-tons on each leg under the ring walls, 15-tons on each leg under the conical base.

From the many types of PS Co. equipment available, "Extra Heavy Duty Shoring" components are specified by both companies' engineers as the correct supporting medium for the job. The load bearing capacity of this equipment meets the requirements. An engineering layout, supplied by PS Co., provides exact detailed plans for correct placement of shoring legs and erection of the equipment. The photo shows how the Shoring is erected, ready for the forming lumber. Exact height adjustment is achieved by the use of 25-ton capacity screw jacks. As proved on this unusually heavy supporting problem—there is a type of PS Co. Shoring equipment available to do practically any kind of shoring, regardless of the size or weight of the job.

NOTE—Additional PS Co. equipment to be used in 2,000 frames of "Trouble Saver" 5'-wide Sectional Steel Scaffolding to provide platforms for exterior work around the periphery of the vapor shield and "Trouble Saver" 2 -wide Ladder Scaffolds support heavy concrete beams of other structures.

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ELEVATION VIEW showing the concrete area which is being supported by the "Trouble Saver" Shoring.



SKETCH of the 134,000 kilowatt plant, which will cost about \$50,000,000 scheduled for late 1960 operation.

FOR GREATER SAFETY...EFFICIENCY...ECONOMY



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1550 Dayton Street, Chicago 22, Illinois • West Coast: 6931 Stanford Ave., Los Angeles 1, Calif
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Complete scaffolding equipment and engineering service offered through nation-wide sales offices or representatives. Look under Patent Scaffolding in the Yellow Pages for your nearest source.

ALES RENTALS

# NEW Caterpillar No. 933 Series F Traxcavator delivers up to 22% more production

The new Caterpillar No. 933 Series F Traxcavator with a larger, 1½ cu. yd. bucket is ready now to set new production records. It is the latest achievement of Caterpillar's "Project Paydirt\*."

Field tests on a variety of jobs and working conditions proved the new Series F delivers up to 22 per cent more production than previous models of this popular machine.

The power source of the new No. 933 is an efficient new 52 HP Cat Diesel Engine. It features a new cylinder block, engine balancer for smooth performance, unit-serviced fuel pump, and a side-mounted starting engine for compactness and economy.

A new transmission and a heavier final drive give the new No. 933 the speed and stamina to maintain quick, easy loading and faster cycling. Cycle time is further shortened by a high-speed reverse—3.67 MPH.

The new machine features greater operator comfort and efficiency. All controls are conveniently visible. Leg room is ample. The mechanical advantage of the steering clutch brakes has been increased 30% for easier operation. A new, larger seat is more comfortable, continues to provide good visibility, both front and back.

And the new No. 933 retains the superior design features that have made Traxeavators first choice on jobs throughout the world. The exclusive oil clutch, automatic bucket controls, 40° tilt-back, heavy-duty undercarriage, unit design and construction — to name just a few. And the exclusive Side Dump Bucket is available to add versatility.

Get the complete story on the new No. 933 from your Caterpillar Dealer. Ask him to demonstrate how this Traxcavator can step up production on your job.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

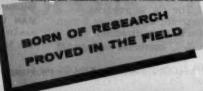


HIGHER PRODUCTION and more profits are possible with the new Caterpillar No. 933 Series F Traxcavator featuring a 11/4 cu. yd. bucket.

\*PROJECT PAYDIRT: Caterpillar's multi-million-dollar research and development program — to meet the continuing challenge of the greatest construction era in history with the most productive earthmoving machines ever developed.

#### CATERPILLAR

Colorollier, Cab and Transcular are Builtiered Trademorks of Colorollier Tracks Co.



#### Forms and Men Go Up With Showy Speed



FORM PANEL—Cable lowers form panel to ground when its work is finished.

Key to rapid pouring of the building's concrete core is three sets of forms that work three floors simultaneously.

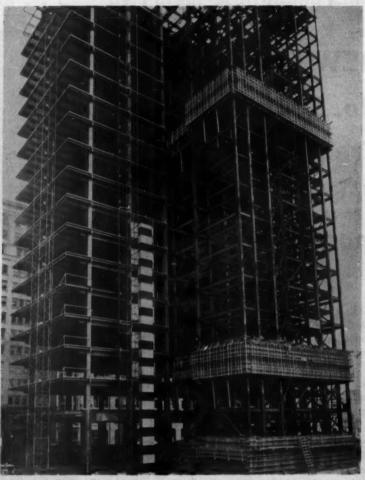
One set started at ground level; the two other sets started at positions higher up on the structural steel frame. The forms are supported at each position by tiebolts anchored to inside forms and vertical structural steel. Further support at form bottoms come from timber shores wedged down against steel beams.

The forms stand 18 ft high, are faced with wood sheeting, and are strengthened by wood stringers and braces in back. They are raised by cables operated off winches set on roof-top.

A man lift inside a plywood enclosure saves an hour for every man working on the top floors. The lift is common to parking garages. It meets union rules and those of the California Industrial Safety Department that prohibit workmen from riding temporary materials elevators.

The lift was installed in three sections. Men transfer from one section to another at terminating floors. The rig is powered by a 7½-hp motor and handles 6 men per min in each direction.

continued on page 118



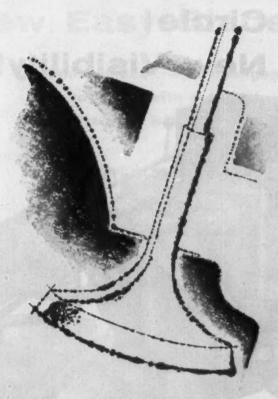
THREE FORM SETS—They're not slip forms, but they work almost the same. At completion of a pour, each of the three form sets is moved up tripling normal concreting rate.



MAN LIFT—Candy stripe box encloses man-lift that climbs in three stages to the roof. Box is open on inside.



TWO-WAY TRAVEL—Workmen simply step on the lift, grab hold, and move up or down the building at a rapid rate.



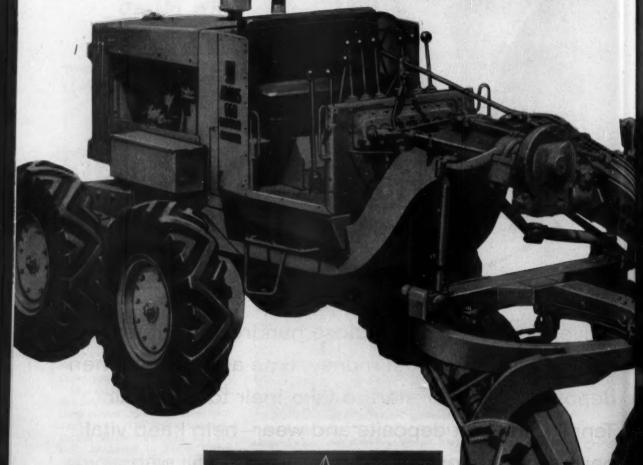
Valves...
Oil...
and How to
Save Money

Valves which open and close hundreds of times a minute can cause lost money, time and power when deposits and wear start to take their toll. Sinclair Tenol\* Oils fight deposits and wear—help keep vital parts working longer without repair. Refill with Tenol now. Next time management asks how you've cut costs, tell them you've switched to Sinclair—and show them the results.

Call your Sinciair Representative for further information or write for free literature to Sinciair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. There's no obligation.

SINCLAIR Tenol'Oils





#### HERE IS VISIBILITY PLUS!

Your operator can see straight ahead as well as both ends of blade where visibility counts!



Big 63" CIRCLE with "straightdown" lift links assures positive, accurate blade pressure.

Save time in the field with newmoldboard tilt adjustment. To make desired adjustment, just loosen one nut on each circle leg.

### New Easy Blade Adjustment!

Check these major changes in L-W graders
...together with proven L-W quality features,
they're your best bet for profits in 1959

Now, the world's finest graders are even better! New 1959 LeTourneau-Westinghouse motor graders, now in production, offer you these important new features:

**FULL-SWEEP VISIBILITY...** sitting or standing, your operator can see *straight ahead* and *both ends of the blade*, where full visibility counts!

**NEW BIG CIRCLE**... 63" overall diameter, none bigger in the industry! Wide-spaced circle legs assure stable blade control.

**EASY TILT ADJUSTMENT...** your operator makes only one easy adjustment on each circle leg to change tilt of blade. New universal mounting simplifies field installation of slide or power-shift moldboards.

There are more changes...including enclosed ball-socket lift-link caps and a new 6-cylinder engine for 3 models...plus all of the proven speed and power advantages that have made L-W graders the standard of the industry for years.

See your L-W Distributor now. He has full facts on the grader that can make your grading operations more profitable this year.

Here's the 190-hp POWER-Flow® 660...one of seven sizes of L-W graders now available, with from 60 to 190 hp. POWER-Flow models offer full torque-converter transmissions; other L-W graders offer transmissions with 8 forward speeds, 4 reverse, and 3 optional creeper speeds... unmatched by any other grader!

0-2126-DC-



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

## WET JOBS

SINCLAIR PIPELINE East Chicago, Ill.

Contractor: O. R. Burden Const. Co.



#### WELLPOINT PUMPS HANDLE 22 FT SUCTION LIFT

Lowering 16 ft of water at this lift would ordinarily mean placing wellpoint system on a berm below ground. Actually, as photo shows, results were achieved in the simplest way, without additional excavation, the wellpoint line and pumps working from street level. Other noteworthy items revealed by the photo include: (a) pre-drainage with wellpoints on only one side of wide trench; (b) the opencut method, eliminating costly sheeting.

• The foregoing are typical of the efficiencies of the Griffin Wellpoint systems (several used continuously) on this vast project which involved mile on mile of digging, with the majority of the pipelines laid far below ground water table in deep trenches containing water-bearing sands. Progress rate? Even in many of the swampland sections, it topped 500 ft per day. For "quickdry"... specify... Griffin.

### GRIFFIN WELLPOINT CORP.



SALES • RENTAL • CONTRACT 881 E. 141st St., New York 54, N.Y. Jacksonville, Fla. • Houston, Tex. W. Palm Bch., Fla. • Hammond, Ind.

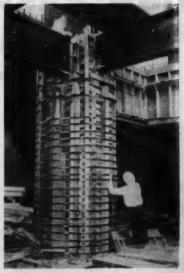
In Canada: Construction Equipment Co., Ltd. In Venezuela: Drew Bear & Sons C.A. IMPROVED METHODS ...

# Steel Strapping Delivers Savings On Forming Time

Steel strapping proves a real money saver on interior forming.

Together with she bolts to provide alignment, straps support column and beam forms. Straps are wrapped on 6-in. centers around forms spread by bolts to support column concreting. To handle beam forms, straps are hung from upper beam flanges, passed down through slab forms, and wrapped around form soffits.

For column support, straps are 1½ in. wide and .033 in. thick. Those for beams are ¾ in. wide and .029 in. thick.



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COLUMN STRAPPING—Superintendent checks positions of bands of strapping wrapped on 6-in. centers around forms.



STRAPPING BEAMS—Straps wrap under soffits of irregular beam forms eliminating vertical shoring. Straps pass up through holes in slab forms and around steel beams.



STRAPPING DEVICE—Workman operates ratchet-type wrench that pulls strap tight securing beam form. Shearing straps on underside after concrete sets frees forms for stripping.

# Just 6 seconds saved per push-cycle can give you an increase of \$9.60 an hour

F aster push-loading can give you a substantial increase in scraper production and income. Here's how: If your tractor now is push-loading 25 loads per hr. in 2-minute push-cycles, just 6 seconds saved per push (see chart) can mean 1.3 more payloads moved an hour. With scrapers averaging payloads of 18½ yds., this would result in 24 more yds. per hr. — or, at 40¢ dirt, an extra income of \$9.60 per hr. per scraper fleet. Figuring a minimum of 1600 hours effective production per year, this minimum gain in yardage would produce for you a plus of \$15,360.

You can realize this extra yardage and income with a fast, powerful pusher that can position quickly behind your scraper. One that can push with speeds matched to your rubber-tired scrapers ... and with acceleration available to give them a running start out of the cut in high hauling gear.

Only the LeTourneau-Westinghouse 436-hp, rubber-tired "Twin-C\*" pusher has these speed and power qualifications for faster push-loading.

#### 20 mph speeds, non-skid wagon steer

For quick positioning behind scraper, this 436-hp pusher, with synchronized

Pusher Cycle (includes positioning be- hind scraper, pushing, boosting scraper out of cut and returning)	Loads per 50-min. hr.	Yards per load	Yards per hour	Increased yardage per hour	Pay per yard	Extra income per hr.
120 sec.	25.0 - with 6 secon	181/2	462.5			
114	26.3	181/2	486.5	24	40¢	\$9.60

This additional income per hour will pay all pusher depreciation costs, plus the major parties of interest, insurance and taxes.

tandem engines, has speeds to 20 mph forward, 5.8 in reverse. Also, for fast maneuvering to make contact with scraper, pusher has wagon-type steer—through large ring gear and pinion in yoke connection. For fast pushing, Twin-C torque converter matches loading speeds of any of your rubber-tired scrapers. This matched speed...plus power up to 65,000 lbs. of drawbar pull by actual test...helps this super pusher get bigger loads faster, gets scraper on its way at maximum hauling speed.

You also get plenty of traction with your four-wheel drive in soft going. Each pair of drive-wheels is controlled by its own exclusive L-W power-transfer differential. When any one wheel starts to spin, wheel on opposite side gets power boost (up to 80% of total).

In addition to these capabilities for faster loading, the Twin-C pusher offers you all the advantages of tandem push-power in one unit with one operator. There is no need to doublehead big, slow crawlers to have adequate power to push larger scrapers. With the Twin-C you have ample power...plus 20 mph speed...plus the economy and maneuvering ease of one machine with one operator.

#### Ask for more details

Write or call for full specifications on this rubber-tired super pusher that can save you time and money with faster pushing cycles. \*Tradsmark TW-1746-DC-1





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a delivery construction fasteners contact



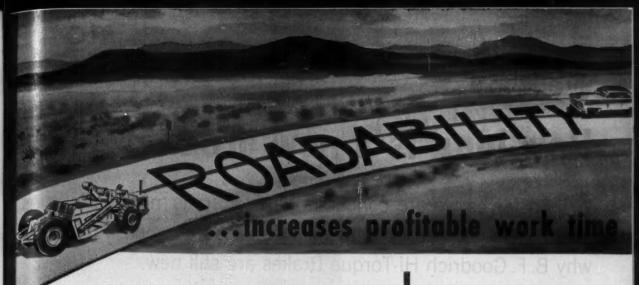
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BETHLENEM STEEL COMPANY, BETHLENEM, PA. On the Pacific Cases Bathlehom products are said by Bethlehom Pacific Coast Steel Corporation. Export distributor: Bathlehom Steel Export Corporation.

Page 120 - CONSTRUCTION METHODS and Equipment - March 1959



When you're in small-volume "hitand-run" earthmoving work, you find that cutting costs is really tough! Compared to a big highway job, where you might find a dozen ways to cut corners, there aren't many economy angles to a 4,000-yd alley improvement, or a ten-day subdivision assignment.

Study your cost sheets, though, and you may find the problem ... and the solution . . . that contractor Martin Franklin did. Franklin, who runs a general grading and excavating business in Albuquerque, N.M., often handles several small, widely-scattered earthmoving jobs in a month. Until the spring of 1958 his big problem was the cost of loading and carting his crawler-and-pan combinations from job-to-job, This loss of production time was eating up too much of the profit he was getting for his work. Profits from two or three "chargeable" days, for instance, might be offset by a halfday or more of lost work time hauling

bulky, non-roadable "track" equipment to and from the job site.

#### Solution: switch to D 'Pulls\*

When Martin Franklin switched to two new LeTourneau-Westinghouse D Tournapulls® his problem was solved. These 138-hp, 9-yd capacity scrapers are driven job-to-job, rolling at speeds to 29.5 mph through Albuquerque streets and suburban areas... without special permit, without extra help or trucks, and without difficulty. In Franklin's words: "They get to a job and begin working before I could get crawler equipment moving!"

#### Other advantages . . .

Roadability is only one of the advantages of the D Tournapull. Just as important, profit-wise, are two L-W exclusive features: positive, instantacting electric controls, and "workanywhere" power-transfer differential. Some of the other facts about the "Handyman D" are listed on this page ... but for all the information you'll want on this money-maker, ask for full details, including a demonstration.

#### QUICK FACTS on D 'PULLS

Capacity: 9 cu yds heaped 7.3 cu yds struck 10 tons

Power: GM Diesel, 138 hp @ 2,000 rpm

Transmission: sturdy step-gear

Differential: power-transfer; automatically transfers power to wheel an firmest facting

Speed: to 29.5 mph

Stearing: electric, positive power makes 90° turns, 180° turn in 24'3"

Controls: electric, instant, fingertip control of apron, bowl, and tailgate

Tires: standard: 18.00-25, 12-ply Traction Type optional: 18.00-25, 16-ply Rock Service 23.5-25, 16-ply Traction

Brakes: multiple-disc air type on all 4 wheels. Surface, 2,800 sq in. Electrotarder optional

Roadability: standard 8' width, axle loads well within legal limits for permit-free travel

Interchangeable Trailing Units: 11-Ion Rear-Dump, 10-ton Side and Bottom-Dumps, 10ton Flat-Bed Hauler, 10-Ion Crane. These units interchange with scraper behind same prime-mover.





LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company



### How long is a new product new?

As far as we are concerned, a product is "new" as long as nobody else comes up with an idea that's as good. And that's why B. F. Goodrich Hi-Torque Brakes are still new.

Today, more than a year after B. F. Goodrich Hi-Torque Brakes were introduced, we can still make the claim we started with: B. F. Goodrich Hi-Torque Brakes stop heavy off-road equipment up to twice as fast as conventional two-shoe brakes.

Full circle stopping power provides constant lining pressure, resists fade. Brakes require no lubrication, adjust themselves automatically. Operators work faster—with greater safety—even on terrain once considered unsafe. And B. F. Goodrich Hi-Torque Brakes are the only brakes with reserve power to handle those giant wheeled vehicles still on the drawing boards.

If B. F. Goodrich Hi-Torque Brakes are still new to you, now's the time to ask your equipment manufacturer for facts or contact B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Dept. CM-39, Troy, Ohio.



B.F.Goodrich Hi-Torque brakes







# Atlas White Cement marks the curve day or night

Reflecting concrete curbing made with Atlas White portland cement marks the road's course—every straightaway, curveand turn—well ahead of the driver. By day, the white surface stands out in contrast to darker road paving. By night, saw-toothed corrugations reflect the car's headlight beams back to the driver for greater visibility. And rainy weather actually heightens the effect; wet curb surfaces become even more reflective.

For more information on the use of Atlas White portland cements in highway and street construction, write Universal Atlas, 100 Park Ave., New York 17, N.Y.

OFFICES: Albany • Birmingham • Boston • Chicago Dayton • Kansas City • Milwaukee • Minneapolis New York • Philadelphia • Pittsburgh • St. Louis • Waco



Universal Atlas Cement Division of United States Steel

## GMC OPERATION "HIGH-

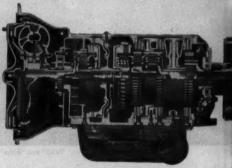


50% more carrying capacity with GMC's new Wide-Side pickup! And it's all spuck—from the tread up! Longer-lasting wood body floor with steel skid strips; double-walled steel construction; heaviest front crossmember—the same used in bigger GMC's!

HATEVER the job, there's a GMC to do it! Now, from Operation "High Gear", comes the widest selection of cabs, engines, axles, transmissions, frames and wheelbases ever offered! Models from sturdy light-duty pickups to big 45-ton workhorses! They're all new, and all part of the greatest design and engineering program in truck history! Stop in at your GMC Dealer's today and see how new money-saving, money-making advances can pay off for you!

Low-cost, dependable POWER under every he You get a wide choice of high-torque, low rpm eng —truck built for long, trouble-free performance! Meanings with 7 times longer life plus over 40 a quality features are standard on GMC Trucks.

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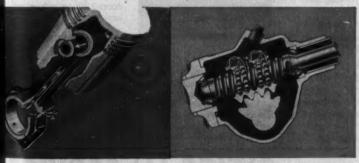
Start all loads smoother, faster with Torquatic Drivel put torque and speed are automatically adjusted to the lithus preventing engine lugging and stalling. And because the shock is absorbed by hydraulic fluid, damage to drive components is virtually eliminated. For maxisyam fuel econom automatic lockup clutch is provided.

EAR"

offers you the biggest selection of truck chassis and components for construction work in the industry!



Hauls over 16% more ready-mix on every tripl Tailored to ready-mix needs, this GMC FW556 outhauls anything on the road . . . 7 full yards at a clip within a 46,400 lb. totall For example, on 1,000 cubic yard jobs it saves you up to 24 full tripal Up to 90,000 lbs. GCWI For hauling big construction equipment and materials, GMC offers the widest selection of six-wheelers in the business! Plus the economical new GMC 6-71SE two-cycle diesel engine—and the best diesel service from coast to coast!

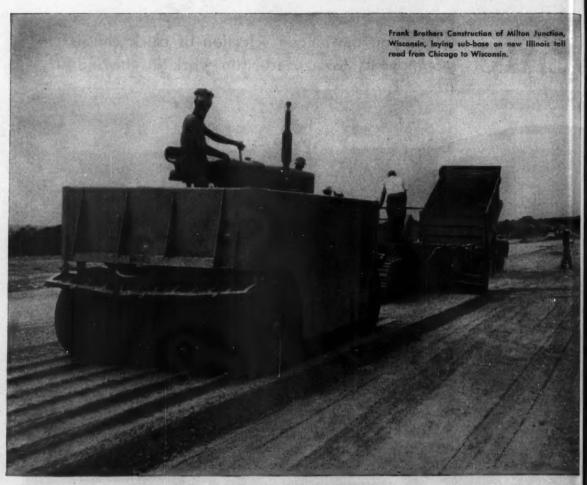


drilled connecting rods greatly inengine life! By rifle-drilling small oil through the connecting rods, oil pressure ivered directly to the piston pins, resultless engine wear, greater economy!

to the la ecause di to drive uel econo Easier steering! All GMC trucks are equipped with recirculating ball type steering gear as standard equipment. Because rolling contact is maintained between all working surfaces, steering is smooth and easy!



From ½-ton to 45-ton . . . General Motors leads the way!



## New toll road takes small toll on equipment

#### thanks to Cities Service lubricants!

Laying sub-base for a 15-mile stretch of the new Illinois toll road is no easy task... especially when there's a 140,000-yard rock cut to be removed.

Rock or no rock, Frank Brothers must get the job done on time or they'd idle the paving contractors working the stretch directly behind them.

To do this, Frank Brothers' crushing plant and its many earthmovers and graders must operate without breakdown—without headache. And they do just that, thanks to Cities Service C-500 Motor Oil and other fine Cities Service products.

Recommended for Caterpillar diesel engines operating under the most severe service, Cities Service C-500 Motor Oil has the highest level of detergency-dispersion... a good reason why Frank Brothers' equipment stays on the job, hour after grueling hour.

"Not only is our Cities Service lubrication flawless, but we get the best possible field service wherever we go," says Phillip Frank.

If you're not getting just that from your supplier, talk with a Cities Service Lubrication Engineer. Or write: Cities Service Oil Co., Sixty Wall Tower, New York 5, N. Y.



"Wherever We Go, Cities Service provides excellent on-the-spot service to keep things running smoothly," says Phillip Frank. Portable crushing plant here produces 2,300 cu. yds. of subbase per day.

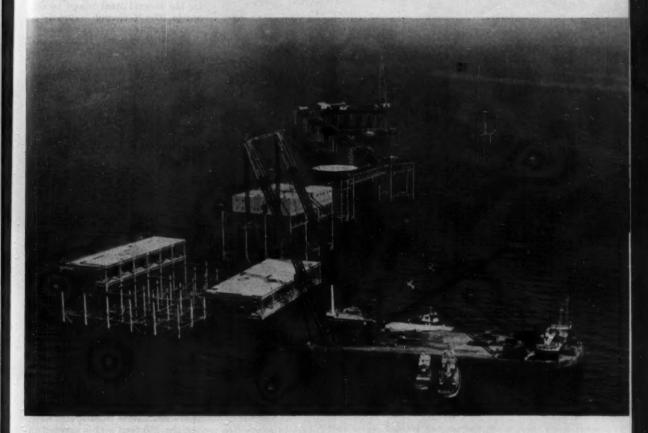
With No Time To Waste, Frank Brothers' equipment must operate constantly without breakdown. "We do it with Cities Service Gasolene, Diesel Fuel and C-500 Motor Oil," says Mr. Frank.



CITIES ( SERVICE

QUALITY PETROLEUM PRODUCTS

# Giant Floating Derrick Handles 645-Ton Lifts



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ortable

Two 240-ft masts added to this derrick barge enable it to place 645-ton prefab sections in drill platform.

THE BEST WAY to build an offshore steel drilling plant in the unpredictable waters off the Gulf Coast of Louisiana is to prefabricate as much as possible of the steel structure on shore and keep working time at the exposed site to a minimum. Of course the size of the pieces you can prefabricate depends on the capacity of your floating erection equipment.

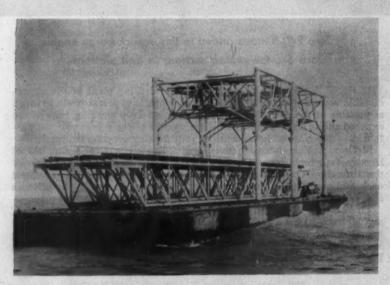
McDermott Fabricators (a division of J. Ray McDermott & Co., Inc., of Harvey, La.) have gone just about as far as you can go with this sort of prefabrication. On their latest drilling plant job, they put together steel deck sections weighing 645 tons, floated them on barges to the offshore site, and lifted them into place with a single derrick barge.

There is only one rig on the Gulf Coast that can handle a lift like that, and McDermott owns it. Normally the rig consists of a revolving derrick mounted on a barge. But for this size of lift, McDermott substitutes two specially-mounted 240-ft masts for the derrick. Together these masts can lift up to 800 tons at once.

continued on next page



Yard on Shore Fabricates Large Sections To reduce working time at the exposed site to a minimum, the contractor did almost all the fabrication on shore. These 150-ton bridge spans (above) are designed to fit into place with no welding needed at site. Large prefabricated sections travel 120 miles to site on bargas (below).



Page 128 — CONSTRUCTION METHODS and Equipment — March 1959

The drill plant will form part of the \$30-million Grand Isle sulphur mining operation being developed by the Freeport Sulphur Co. of New York. It is scheduled to be in operation by 1960. McDermott has two contracts, totaling \$2.5 million, to furnish and erect the major steel sections of the piers and superstructures.

Everything about this job is big. The drilling plant itself will be the largest steel island in the world. The Y-shaped structure is nearly a mile long, and the working platforms are 75 ft above the water. It sits in 50 ft of water and is supported on pipe piles 245 ft long.

#### **Five Platforms**

There are five major platforms in the plant to support various mining installations. Two are double-deck drilling platforms. The third, and the biggest, supports the power plant that will use 13,000,000 cu ft of gas daily to heat 5 mgd of sea water to 325 deg. The hot water melts the sulphur so that it can be pumped up easily to the surface (Frasch process).

The fourth platform holds offices and air-conditioned living quarters. The fifth platform, entirely separate from the main struture, will hold facilities for drilling wells and disposing of excess mine water. A smaller platform in the main structure acts as a base for the helicopter that will carry mining crews to and from the job.

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The major platforms are connected by bridges. These bridges consist of a series of 200-ft tubular-chord steel truss spans. Each weighs 150 tons and is erected in one piece. They are supported on 10 intermediate pile piers. The bridges carry a wooden roadway as well as pipes for sulphur, steam, water, air, and gas.

The plant is located in the Gulf of Mexico, 7 mi off Grand Isle, La., and almost due south of New Orleans. McDermott decided to fabricate the steel at their Morgan City yard and barge the sections over 120 mi of open water to the site. The fabrication was designed so that in most cases one weld is all that is necessary to connect the sections together at the site. The piles and bridge spans actually need no welding at all during erection.

continued on page 130



# This new CASE. rig will change your entire concept of angledozer performance

#### NOW even further ahead of other dozers in output-per-dollar

Thousands of hours of actual field experience on the world's toughest dozing jobs — backed by continuous engineering refinements — has made the CASE® TerraTrac® "1000" Power-Angling Dozer the most sought-after rig in the 100 HP class. With increased ruggedness, and over 12½ tons of brute pushing-pulling power, the "1000" handles as easily as a modern passenger car. All controls are completely hydraulic. Terramatic power-shift transmission, power-steering and torque-converter drive practically double the amount of work your operators can do in a day. In addition, the Case power-angling blade, coupled with counter-rotating spin-turns, eliminate "dead" back-up time...make every pass a working pass.

For convincing proof of what these exclusive advanced features can mean on your jobs, see your nearby Case Industrial Dealer, or mail handy coupon for full information.

- New Non-Warping Torque-Converter Mounting insures positive alignment and full oil pressure under severest conditions.
- New Double-Disc Brakes with 3 times larger friction area, give positive braking, longer life.
- New Larger Capacity Radiator and Water Pump provide better cooling at extreme temperatures.
- New Double-Flange Track Rollers insure positive track alignment, greater durability.
- Now Closed-Circuit Hydraulic System eliminates "breathing" and oil spillage, lengthens pump life.

#### J. I. CASE CO., Dept. C1499, Rucine, Wisconsin

☐ Send new literature on "1000" power-angling dazer
☐ Have nearest Case Industrial Dealer call

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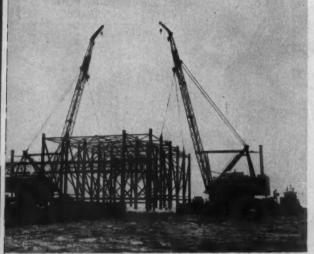




World's most advanced line of wheel and crawler machines for construction, earthmoving and materials handling

#### GIANT FLOATING DERRICK . . . continued

### Massive Templets Guide Piles



PLACING THE TEMPLET—Two 250-ton American Revolver derricks prepare to lower 437-ton prefabricated pile templet to bottom.



PLACING THE PILES—Derrick places 30-in.-dia pipe pile into 34-in.-dia guides in templet. Piles are driven in two sections.

#### **Driving the Piles**

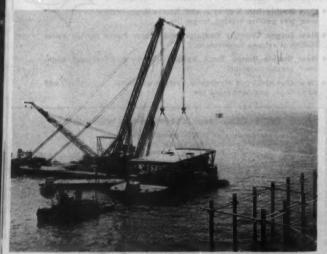
McDermott used a prefabricated templet cage for the piles under each platform and for the bridge piers. The templet not only served as a guide and spacer during the driving; it remains permanently in place to stiffen the underwater portion of the piling against wave action.

The templet for the drilling platform was 200 ft long, 106 ft wide, and 68 ft high. It contained 24 pipe legs, 34 in. dia, in six rows of four each. The 30-in. piles were driven through these legs. The entire unit was assembled in one piece on shore and barged to the site. Total weight of this piece was 437 tons.

To get the templet off the barge,

McDermott used two 250-ton capacity barge-mounted R40 American Revolver cranes, one on each side of the templet. The cranes picked up the templet, the barge was moved away, and the cranes lowered the templet into the water. The top 15 ft of the legs remained above water with the templet in final position on the bottom.

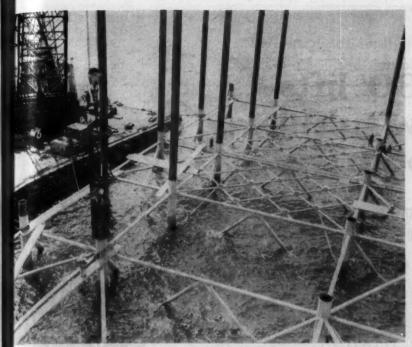
#### Twin 240-Ft Masts Erect Deck



LIFTING A DECK SECTION—Two special masts on derrick barge lift a 645-ton deck section off barge that brought it to aite.



MOVING INTO POSITION—After carrying barge has been towed away, tugs move derrick into position. Masts do not move.



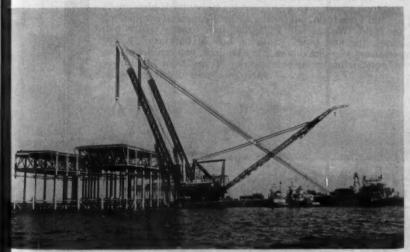
DRIVING THE PILES—Vulcan 140C hammer drives piles. Time required to splice and drive each 245-ft pile averaged 3 hr.

The 30-in. dia pipe piles averaged 245 ft long. They were driven in two sections—the first 165 ft long; the second, 80 ft. A beveled, self-aligning, stabbing guide on the top section fitted exactly into the open end of the bottom section.

One of the American cranes drove the piles with a Vulcan 140C hammer. On the average it took 3 hr to complete each pile, including driving and splicing.

The pipe piles remain empty. But the annular ring between the 30-in. pile and the 34-in. templet leg was grouted in with concrete. The templet and the piles were welded together at the top.

Erection procedure on the 42pile substructure for the power plant platform was similar.



LOWERING THE DECK-Winches lower the deck section onto the piles. Stabbing points on deck fit into open ends of piles.

#### The Big Lift

The two biggest pieces to go into the plant were the identical halves of the deck for the power plant platform. Each one of these truss frames weighed 645 tons. They fitted directly on top of the piles by means of stabbing points that guided themselves into the open pile ends.

To lift them into place McDermott installed what they call their "portable lifting gear" on one of the derrick barges. The main part of this gear is the pair of 240-ft masts that are mounted on the front corners of the barge.

The American Revolver crane first placed two erection struts on the front corners of the barge. Then it positioned the two 150-ton masts with the struts supporting them part way up and with the lower ends resting in well-braced sockets on the barge deck.

The tops of the masts were connected to the back corners of the barge by stays. These stays consisted of 36 parts of 1½-in. cable. They are built in two sections with a pin connection in the middle. When not in use the front half of the stay remains with the mast, and the back half remains on the barge.

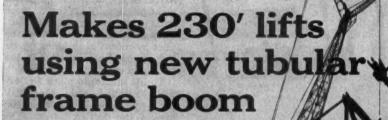
The stays were reeved in so that they supported the entire weight of the masts, taking the weight off the erection struts. Just previous to this operation, the Revolver crane had positioned its boom between the stays. This kept it out of the way during the lifting operation.

Two American steam hoists mounted on the rear of the barge powered the lift. The block fall on each lifting line consisted of 40 parts of 1½-in. cable. The lifting capacity of each mast was 400 tons. Working together, as they did on this job, they could lift 800 tons. This was more than enough capacity to handle the 645-ton deck sections.

The job of fitting the barge with the temporary lifting gear took 36 hr. It was done in a sheltered bay near the job site.

The barge itself is 300 ft long, 90 ft wide, and 18 ft deep. During the lift the front end went down 9 ft, leaving only 30 in. of free-board.

The rig has made lifts on previous jobs right up to the full capacity of 800 tons. But these were salvage jobs. The 645-ton lift on this job was the biggest erection it has made.



WHIPPING, LAGS AND BACKLASH **ELIMINATED... MORE LIVE LOAD** CAPACITY-LESS DEADWEIGHT

> A new type of crane boom - mounted on a Manitowoc 60-ton Model 3900 crane - is doing a spectacular job for the John F. Beasley Construction Company, setting steel at heights up to 230'. The job involves all the steel work for a new bridge to carry U.S. Highway 212 over the Missouri River between La Plant and Gettysburg, South Dakota. Constructed of highstrength tubular steel, the new boom is considerably lighter in weight than conventional booms. Although 200' long, (without 30' jib) it weighs 25% less than standard booms as short as 150'. Therefore, it can handle substantially greater live loads because of less deadweight of its own to support. • Operator O. K. Bean reports: "I never have trouble with boom whipping now, even when carrying heavy loads high up ... and I can boom out further without danger of overloading the crane. We can still locate the 'iron' exactly on the bolt hole the first time... with no lags or backlash." For apecialized jobs like this or everyday jobs, you can depend on outstanding crane or excavator service from Manitowoc — check with your distributor soon!

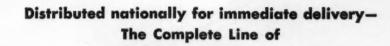
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MANITOWOC ENGINEERING CORP.

(A subsidiary of The Manifown

CRANES | SHOVELS DRAGLINES TRENCH HOES

20 TON - 100 TON 1-YD. - 51/4-YD. 1-YD. - 6-YD. 1-YD. - 21/4-YD.



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The quality line for original equipment... the preferred line for fast, easy on-the-job replacements! Let Surgepruf be your one dependable source of hose, couplings and components for every industrial and automotive application! High-pressure, medium-high pressure and low-pressure hose for temperature operating range of  $-40^{\circ}$  to  $+275^{\circ}$ F. Couplings are reusable. Complete range of hose sizes and couplings, as well as adapters and swivel adapters. One of Alemite's 34 strategically located distributors is ready to give you prompt, complete service!

Medium-High and High-Pressure Hydraulic Hose and Fittings. Single and double wire braid hose. Non-skive feature assures easy assemblies in seconds. Seamless inner tube of Buna-N rubber and Neoprene outer cover. Resists abrasion, weather and oil. High strength reusable couplings. No special tools required.

New Low-Pressure "Shur-Lock" Hose—for use on fuel, filter, oil, air and vacuum gauge lines. Rugged, precision-matched couplings. Leak-proof grip. General purpose hose and coupling utility kit eliminates need for large inventory.

Kit No. 2208

Permits fast, easy on-the-spot assemblies for most common lowpressure automotive applications.



Kit No. 2209

For low pressure fleet, automotive and industrial general purpose use.



Write today for Surgepruf Catalogs!

Kit No. 2207

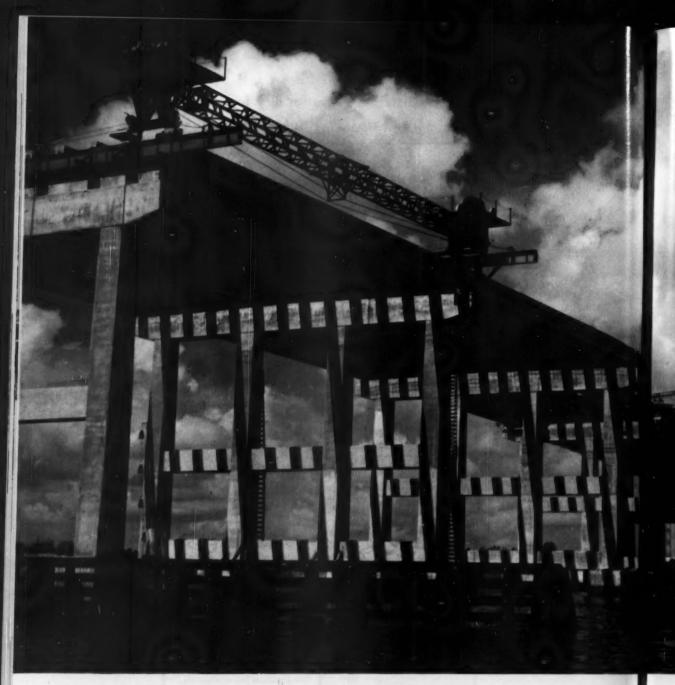
A complete selection of reusable couplings, adapters and swivel union adapters for most mediumhigh pressure industrial and farm equipment hydroulic lines.





ALEMITE STEWART-WARDER

Dept. P-39, 1850 Diversey Parkway, Chicago 14, Illinois



Contractor speeds \$3,500,000 causeway job with floating Gulf

### GULF MAKES THINGS

What's the best way to get 20,000 cubic feet of concrete from shore to site to pour piers and struts for a major bridge project? And at the same time have fuels and lubricants always on hand instream?

That was the problem faced by Heavy Constructors, Inc., of Miami and Fort Lauderdale, who are now building the new 36th Street Causeway Bridge linking Miami and Miami Beach. They solved the problem handily with two unusual barge rigs, and in the process found Gulf makes things run better in more ways than one.

Heavy Constructors rigged one barge as a floating set The key ice station for Gulf fuels and lubricants, fresh water at paterial cement storage. At the shore site, Gulf services the bargieneral with Good Gulf Gasoline, Gulf Dieselect Fuel, Gu ated the lubricants and all other necessary petroleum product shore, a including form oil.

They rigged another barge as a floating ready miplant, with a batch plant, two truck-type mixers, and diesel-powered crane. Concrete is mixed and poured the rate of 22 cubic yards an hour.

How a

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Floating ready mix plant pulls up for the pour, at a section of the causeway. Piers, which rest on piling, are formed and poured in place. Pre-stressed concrete beams are used as a foundation for decking and surfacing.



Floating service station pulls up at shore site for refueling by Gulf. This rig stores and transports 5100 gallons of Gulf Dieselect Fuel, 1650 gallons of Good Gulf Gasoline, 8000 gallons of fresh water, 400 barrels of cement.

Miami's new 36th Street Causeway Bridge takes shape in a remarkably efficient construction procedure by Heavy Constructors, Inc., of Miami and Fort Lauderdale. Floating rigs deliver concrete and Gulf fuels and lubricants wherever needed.

tingfulf service station . . .

### SRUN BETTER!

ng sen the key to the success of the whole system is delivery of ater an naterials to the shore site—according to J. R. Bailey, ne barg seneral Superintendent. Working with Gulf they elimiel, Gu ated the big expense of building storage facilities broduct shore, and the time delay of transferring fuels and oils om shore tanks to barges.

How about your projects? See how Gulf makes things s, and in better-with quality fuels and lubricants and rompt delivery from a dependable source of supply. ontact your nearest Gulf office or use coupon.

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#### **GULF OIL CORPORATION**

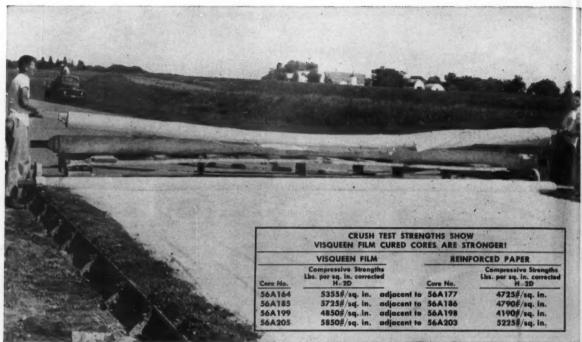
Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

- ☐ Send me a copy of "Gulf and Your Business."
- ☐ Send me a copy of "Contractors' Guide" (Lubrication and Maintenance)

Company.

City

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Core strength tests show results obtained with VISQUEEN film curing blankets.

# "VISQUEEN" FILM GIVES STRONGER CURES WITH GREATER ECONOMY

LOW FIRST COST—plus as many as 23 re-uses cut blanket costs to a fraction of a cent/sq. ft.

LOWER LABOR COSTS result because white opaque VISQUEEN film is far lighter, hence easier, more speedily handled. 1000 sq. ft. of .004" thickness weighs 20 lbs. And white opaque VISQUEEN film curing blankets stay light. Will not absorb moisture.

TIME SAVING: When using VISQUEEN film curing blankets, additional watering is not necessary. The film rolls up easily—needs no drying or special handling. Will not rot or mildew. Inert—no chemical reactions with concrete—leaves no deposit on slab.

ONLY VISQUEEN film comes in standard widths—or blankets—seamless widths up to 32'. Available in 14' roll widths with no folds.

ADDITIONAL USES of VISQUEEN film: rain blankets, equipment and material covers.

Write now—or use the information request tag below for full information on how VISQUEEN film can do your job better at less cost.



**VISQUEEN** film—first and foremost polyethylene film. A product of the long experience and outstanding research of

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In Canada: VISKING COMPANY DIVISION OF UNION CARBIDE CANADA LIMITED, Lindsay, Ontario.

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man! that BAY CITY has real rugged machinery!



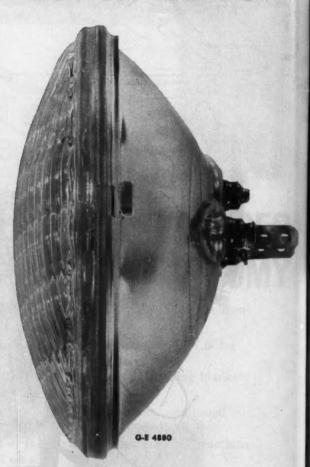
March 1959 - CONSTRUCTION METHODS and Equipment - Page 137

# NOW! GENERAL ELECTRIC OFFERS A COMPLETE LINE OF All-Glass CONSTRUCTION LAMPS

- √ Far-seeing flat beam
- ✓ No inner bulb
- ✓ Reflectors never need cleaning
- ✓ Spattering won't crack lens
- ✓ Maintenance greatly reduced
- ✓ See better in all kinds of weather
- √ 6, 12, 24-volt size

General Electric now offers a complete line of all-glass lamps—especially designed for high-speed, off-highway earth moving equipment. They all feature high candle-power plus a flat, far-seeing beam. Special filament shield blocks stray upward light, reduces "bounce-back" glare, lets operators see better in any weather . . . even in dust!

Whatever the job, a G-E all-glass C.I.M. Lamp will provide the best light for it. Nothing gets past the hermetic seal of lens to reflector, so reflectors never need cleaning. No inner bulb to blacken; special hard glass won't crack in rain or snow, and they take rough treatment day after day. Choose from a wide range of sizes and styles, and specify the *right* all-glass lamp for any construction, mining and industrial equipment. Ask your G-E supplier for full information. General Electric Co., Miniature Lamp Dept., Nela Park, Cleveland 12, Ohio.



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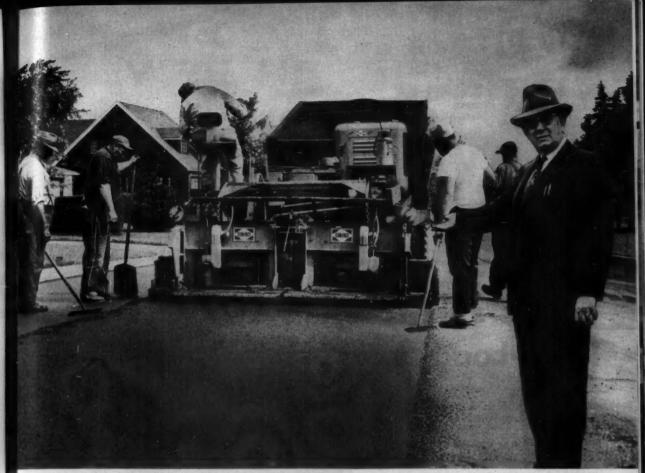
five or

#### SPECIFICATIONS FOR G-E C.I.M. LAMPS

G-E No.	Circuit Volts	Watts	Bulb Dia.	<b>Designed Life</b>
HEADLAM	PS		WHO!	137
4080	6	50	53/4"	500 hours
4480	12	60	534"	500 hours
4880	24	60	53/4"	500 hours
FLOODLA	MPS-PAR 46	bulbs-	-2 contac	t lugs
4078	6	50	53/4"	500 hours
4478	12	60	53/4"	500 hours
4578	24	60	534"	500 hours

Progress Is Our Most Important Product





Mr. F. Theodore Jenzen watches the PF-45 lay new surface on Amherst's 30-year-old streets.

## This is exactly what we needed to tackle our five-year, 100-mile resurfacing program"

"The Blaw-Knox Black Top Paver will go anywhere under its own power, follow the crown of the road for good drainage and give a smooth surface with depressions and potholes eliminated," says F. Theodore Jenzen, Superintendent of Highways of the Town of Amherst. New York.

"In addition to saving purchasing and maintenance funds, we have a machine with greater maneuverability and fast width adjustments," Mr. Jenzen added. "The Blaw-Knox paver made a very economical and practical buy. On the average it will empty an eight-ton truck in five or six minutes. "In our growing town, contractors are laying out and constructing an additional 10 to 12 miles of streets per year. No doubt we'll have to replace some of that mileage in the future. The PF-45 is ideal for this type of work, and there's no question that the machine will do the job," he concluded.

Big paver features and top performance have made the Blaw-Knox PF-45 a favorite with highway departments and contractors all over America. Why not check into its advantages with your Blaw-Knox distributor? Or, write for a report based on Superintendent Jenzen's experience.



Life

#### **BLAW-KNOX COMPANY**

Construction Equipment 300 Sixth Avenue Pittsburgh 22, Pennsylvania



LOADING—Two Caterpillar D9's in tandem push-load Cat DW20 fitted with steel side and tail plates that increase the scraper's heaped capacity from rated 25 yd to almost 35 yd.

# Tractors in Tandem Push-Load Scrapers

TWO TRACTORS in tandem push-load oversized, self-propelled scrapers for the Guy F. Atkinson Co on a highway job near Bakersfield, California.

Atkinson's \$7-million contract calls for construction of 6½ mi of eight-lane concrete highway at the southern end of the San Joaquin Valley. The work involves moving more than 3,000,000 yd of fill from a borrow area for embankments up to 90 ft high.

The haul is relatively long—almost two miles each way. To maintain a 12,000 - yd - a - day earthmoving schedule Atkinson works a fleet of modified self-propelled scrapers that load to a third more than rated capacity.

Atkinson took his fleet of Caterpillar DW20's, rated at 25 yd heaped, and fitted them with steel side and tail plates to increase their capacity by about 10 yd.

The extra-heavy load makes it economical to push-load the scrapers with two tractors operating in tandem. And they have to be big ones. The method Atkinson adapted after many cycletimings and weight tests teams a pair of Cat D9's or a D9 and a D8 to push-load each scraper.

Most of the tractors are dual purpose machines. Fitted with bulldozer blades and rippers they also handle pioneering work. But some of the D9's are stripped down models that carry nothing but push plates fore and aft. These tractors serve exclusively as the middle machines in the tandem pushing.

When the built-up scraper moves into the borrow pit, one of

the stripped-down D9's moves in behind it, and one of the dual purpose tractors comes in behind the D9. The two tractors push-load the scraper to its full capacity.

The payoff is the fact that tandem loading gets more material into the scrapers than loading with a single D9 as pusher. It is particularly useful in difficult, hard-to-load materials.

But when several scrapers arrive at the borrow pit at about the same time, they may be pushloaded by a single tractor to keep them rolling. And in some easy-to-load materials tandem pushing is not necessary.

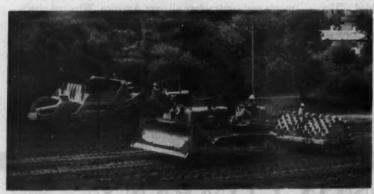
#### Shovel Work

A good percentage of the excavation yardage involves taking thin sliver cuts on the steep sides of the canyon adjacent to the roadway. Some of these are too thin for bulldozer pioneering so Atkinson handles this sidehill work with a Bucyrus-Erie 150-B electric shovel that loads into Euclid bottom dump trucks. The shovel is rigged with a 6-yd bucket instead of the usual 8-yd bucket for closer control of the work. Haul here also is about 2 mi.

Atkinson's prices include \$0.60 per yd for unclassified roadway excavation and \$0.33 per yd for overhaul.

The eight-lane highway, a project of the California Division of Highways, will be paved on uphill grades with 10 in. of concrete, on downhill grades with 9 in. of concrete, and on level grades with 8 in. of concrete. Shoulders will be paved with a plant-mix asphaltic concrete in varying thickness.

Evan Millington is project manager for Atkinson. Norman Lambeth represents the highway department.



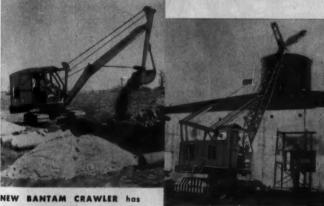
SPREADING—Scraper spreads fill on embankment area while a Cat D8, pulling two sheepsfoot rollers, compacts material. Some embankments on the job are almost 90 ft high.

### THEY'RE HERE!

#### all-newBANTAM 350's

UP go capacity and earnings to all-time highs in the 3/8-yd. field!





NEW BANTAM CRAWLER has stronger, more rigid car body with two side frame sizes, standard and long, for extra stability on crane work to eight tons . . . wide base extensions and high-clearance side rails. BANTAM C-350 also features full-reversing, 2-speed travel transmission and new in-cab digging lock. New, long-boom back hoe has deep 18'10" digging depth, 7- and 8-ton capacity.

NEW BANTAM SELF-PROPELLED brings new versatility and income potential to this class. Optional 4 x 4 drive... new automotive-type power steering... independent travel, swing and hoist plus faster travel speeds... new bypassing box-beam outriggers for all-around stability. It's the most maneuverable, most capable rig of its kind and it has full 11-ten capacity!

These new BANTAMS are the most productive and most proved crane-excavators in their size ever offered. So much so, they perform and earn far above their class!

The new 350 series advances the already amazing BANTAM work scope by literally hundreds of additional jobs! You'll handle more jobs, bigger jobs, tougher jobs, trickier jobs — all faster, easier, more profitably. New, increased power (gas or diesel) . . . new, increased line pulls . . . new, speeded work cycle with instant-acting, trouble-free mechanical controls . . . new, longer crane booms (to 70') and deeper digging back hoe (to 18'10") — all these and more assure the greatest operating ease and production ever achieved in a machine anywhere near its popular size.

#### 4 BANTAM-built new carriers

No compromise in what you want in carrier capacity or price with a BANTAM! BANTAM! BANTAM builds its own carriers matched to the Model T-350 basic unit for all your work requirements. You have a 4-carrier choice — exactly what you want for more of what you need in performance, stability, and road and field ability.

Most features and options

It's yours — by far the greatest flexibility ever offered in a crane-excavator. More than 25 different options virtually make you "designer" of your BANTAM strictly to your own work needs. Three types of boom hoists (one standard, two optionals) . . . power load lowering for all models . . . gasoline, diesel, LP-gas or electric drives . . . torque converter . . . 2-speed transmission . . . wide counterweight choice up to 5000 lbs. . . house-type or all-vision cab . . . plus lots more — all in addition to 11 different quick-change attachments, all BANTAM-built!

Put a new BANTAM through its paces now at your BANTAM distributor's. See him now or write factory.

21



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World's largest producer of truck crane-excavators

Out where the going is toughest . . .

## YOU'RE GLAD YOU CHOSE BOSTON HOSE!

**BOSTON'S rugged strength pays** off where the going is toughest! Remember, 45% of all hose failure is caused by external conditions and that's where BOSTON stands out because it stands up!

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WHATEVER YOUR HOSE NEEDS, THERE'S A BOSTON HOSE FOR YOU!

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MATTING

If he precasts the conduit he can save himself money. If he casts it in place he can save himself time. So this contractor works out a way to save time in a way that also saves him money.

WHAT would you do?

Your contract calls for 9,000 lin ft of 8x10-ft concrete conduit. The contract says you can construct it from precast sections and save yourself some money. But if you cast it in place you'll save yourself time and be able to get earthmoving under way on your highway job before winter storms set in.

That's the problem Guy F. Atkinson Co. faced early in the construction of the \$7-million freeway in San Joaquin Valley in southern California. Atkinson chose the cast-in-place route; but still saved money.

Savings came from a rubber-tired, form-carrying dolly that rode over arch reinforcing and completed sections of conduit. It turned the cast-in-place conduit construction into near assembly-line routine.

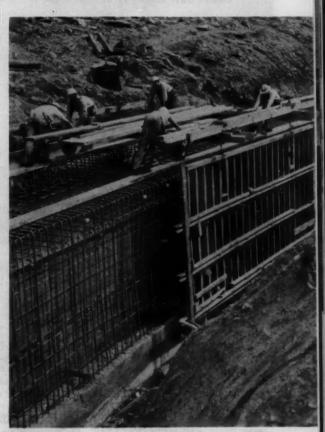
The dolly was a simple rig that rode on four rubber-tired wheels. Connecting each pair of wheels were two 14-ft lengths of timber 3x6's. These served as outriggers. Connecting the ends of the outriggers were two pairs of 3x6's that seated four steel anchors with holes cut through their centers. A steel rod, hooked at the bottom, was slipped down through each anchor. Each pair of hooked rods carried a form by two steel eye rings that were fitted to the form's upper edge.

The job routine was this. Atkinson first poured a 100-ft length of concrete conduit invert. He then built up inside forms for side walls and arch and placed reinforcing steel around the forms. Two parallel rows of scaffold planks then were thrown over the arch reinforcing to serve as runways for the dolly.

The dolly next was set over the runway, and a 20-ft-long preassembled form panel was hooked by its eye rings onto the outrigger bolts. Workmen then had only to push the rig carrying the form forward or backward to bring the wall form into position. Once a 100-ft-long length of outside wall forms were tied to the same length of inside wall forms, a section of conduit was ready for a pour. Concrete was truck mixed and placed by crane and bucket.



# **Dolly Carries Conduit Forms**



FAST WORKING RIG—Workmen push contractor-built rubbertired dolly that carries 20-ft side forms while it moves over arch reinforcing and completed conduit. Dolly turns cast-in-place conduit construction into near assembly-line routine

The dolly played a role in stripping operations, too. After a section of concrete conduit was cured, outside forms were released in opposite pairs and bolted to the dolly that carried them to a new section being prepared for a pour. This helped Atkinson maintain a rapid pour rate for 100 ft sections of conduit.

Atkinson bid the job on a lineal foot basis. His prices ranged from \$55 to \$92 a ft for the work. The higher price covered a section of conduit that had walls 17½ in. thick, a roof 21½ in. thick, and an invert 24 in. thick.

Evan Millington was Atkinson's project manager for the entire freeway construction.

# Southern Pacific bridges an inland sea

Great Salt Lake, Utah—Take a mountain of rock, sand and gravel—36,000,000 yd of it...stretch it 12.6 miles with the help of the world's biggest tractor shovels... then sink it 68 to 85 feet deep into Great Salt Lake. That's how the men of

Morrison-Knudsen are building a new, solid-fill, deep-water, roadbed for Southern Pacific Railroad across Utah's great inland sea. Allis-Chalmers HD-21G tractor shovels play an important role in this gigantic undertaking.



#### Multi-million dollar job passes halfway mark

The monumental job, scheduled to finish in 1959, triggered some of the largest non-atomic blasts in history to supply fill material. One blast powered by 2,138,000 pounds of explosives yielded 3,700,000 cu yd of broken rock.

Most of the fill is being placed by a fleet of eleven barges loaded by two methods. One is a spectacular two-mile conveyor system said to be the world's largest in terms of tonnage moved—4,000 to 4,200 tons per hour.

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# 4-yd HD-21G's work ashore and afloat

The second method is by trucks that dump directly to barges. This fleet of 17-yd dump trucks moves constantly from stockpiles adjoining railroad tracks to the barges on a 20-hour a day schedule. Much of the truck loading is handled by Allis-Chalmers tractor shovels, only tractor shovels on the job.

With characteristic versatility, the tractor shovels are also able to board the barges and help place



.move ahead with ALLIS-CHALMERS



Giant 225-hp Allis-Chalmers HD-21G tractor shovels handle their share of the fabulous 36,000,000 cu yd of fill going into the causeway. Production on the job has hit as high as 100,000 cu yd in a single day.

rock ballast on the causeway itself. If their loading ability is needed on the opposite shore. they are easily transported by barge or regularly-scheduled work train.

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#### For a big job-big machines

Men talk about the Salt Lake Causeway job in superlatives. Big machines moving tonnage at a record-breaking pace. And the HD-21G's on-the-job advantages match it all the way: the highest lift and the longest reach-with the biggest load. From ground

level, the 4-yd bucket dumps handily up to 13 ft, 4 in.—high enough to clear the sides of the biggest haulers.

Morrison-Knudsen keeps close service records of each machine on the job. Service logs for the HD-21G's show they put in maximum time-offer top availability to keep producing.

Here's actual proof on a heavyduty tractor shovel operation

that Allis-Chalmers maintenance and service cost is low-that you get more profit-making availability and production from your Allis-Chalmers equipment. Your Allis-Chalmers construction machinery dealer will demonstrate the size tractor shovel that fits your work-11/2, 21/4, 3 or 4-yd capacity. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



wer for a growing world

# **Turning The Headings Under Air** TWO LOCKS STEP 1 AIR ON STEEL HATCH Concrete lining makes lower part of shaft airtight. With air on, south SHEET PILING eading is driven with shield, Over-CONCRETE LINING size drift on north is hand mined. SOUTH SHIELD BREAST BOARDED -HEADING OVERSIZE DRIFT LINER PLATE -STEP 2 AIR OFF With hatch cover off, both regular concrete forms are lowered into the auth heading. The north shield is gwered into the oversize drift. NORTH FORM NORTH SHIELD SOUTH FORM BREAST BOARDED TEP 3 AIR ON th shields and both concrete forms STEP 4 AIR OFF With the air off main shaft, an air then goes on both headings and each side.

# **Tunnelers**

With soil conditions changing almost every foot of the way, a New York tunnel contractor has to change his tactics continually to meet them. The battle started with the shaft—he was able to sink it in free air but had to use compressed air before he could break away into the headings.

By JAMES G. RIPLEY
Assistant Editor

THE GEOLOGY of Brooklyn, N. Y., is just about as crazy as some of the Dodger fans that used to frequent Ebbetts Field. Go 60 ft under Morgan Ave., for instance, and you're right in the middle of as mixed-up a mass of boulders and soil types as can be found anywhere. For a geologist it's a happy hunting ground. For a tunnel contractor—just one headache after another.

Tunnel crews of the joint venture of Grow Construction Co. and Andrew Catapano Co. Inc., of Glendale, N. Y., are having themselves quite a time driving an 8½-ft finished dia sewer tunnel through this part of Brooklyn. They're getting the job done—and doing it well—but they've had to solve a lot of problems along the way.

The problems started right with the shaft sinking operation. The contractors managed to get an open shaft down the required 60 ft after experimenting with several dewatering systems. But they had to put it under air before they turned the headings.

Using shields they are driving the tunnel in both directions from one central shaft. You don't always see a shield on a tunnel this small—12 ft driven dia—but Grow figures it's the safest and most economical method on this job.

The original contract calls for 3,600 ft of tunnel. And this is being done entirely under air.

# **Battle Tricky Soil Under Air**

An additional 1,400-ft extension of the sewer was to be done by open cut. But because of the residential area through which this section passes, Grow figured it would be safer for the public to tunnel this section. However, to do this economically, they intend to tunnel in free air by dewatering ahead of the mining.

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m lis They are still under air but have reduced the pressure necessary from a peak of 17 psi to barely 2 psi in the north heading by lowering the water table in advance of the tunnel with well-points and deep wells.

The tunnel will form part of the 2.7-mi Morgan Ave. Interceptor Sewer in Brooklyn. A joint venture Andrew Catapano Co. Inc. and Grow Construction Co. Inc., has a \$10.3-million contract to construct the sewer. A total of 5,000 ft will be tunneled; Grow is doing this part. The remainder is open cut work; Catapano handles that section.

The Morgan Ave. sewer is part of New York City's Newton Pollution Control Project. The system will collect and treat sewage from parts of Brooklyn and Queens that now is dumped into the East River. The first phase of the project, including a 310mgd treatment plant, is to be completed in 1963; it will cost \$109 million. The Morgan Ave. sewer will be finished this year.

#### Sinking the Shaft

There is only one shaft for the 5,000-ft tunnel. It is located not quite at the center of the job; the north heading will be 2,350 ft long and the south heading will be 2,650 ft. The shaft site was selected by the Dept. of Public Works as being the only



SEALING THE SHAFT—Crew places reinforcing steel for concrete shaft lining. Later, concrete roof and floor will be poured

in this section of shaft to make air-tight compartment from which tunneling crews can start two headings under compressed air.



SHIELD—Crane prepares to lower one of the 12-ft-dia Mayo shields down the shaft.

#### TUNNELERS BATTLE TRICKY SOIL . . . continued

spot available where operations would not interfere unduly with city traffic.

Grow started to excavate a 24-ft-dia open shaft using a Lima crane with a 1-yd clamshell bucket to remove spoil. As they went down, they lined the walls of the shaft with ¼-in. pressed steel liner plates, reinforced at 4-ft intervals with 5WF18.9 ribs.

For the first 34 ft of excavation they lowered the ground water using an 80-ft-deep well and also a portable concrete sump in the center of the shaft. This was kept drained by a 3-in. electric Flygt pump. The original ground water table was 20 ft below the surface.

At the 34-ft depth they switched to a vacuum wellpoint system to dewater the excavation, since the soil became too fine-grained for gravity drainage. They reduced the diameter of the shaft to 22 ft and sank the wellpoints in the offset, just outside the smaller diameter but inside the 24-ft section of the shaft. This took them down to a depth of 42 ft.

At this level the slit could not be dewatered with the wellpoint system. So Grow again reduced the shaft diameter, to 18 ft, and drove flat 16-in. sheet piling around the perimeter. The interlocking piling was type SP3A supplied by L. B. Foster Co. They continued excavating the shaft and bottomed it out at 62 ft below surface grade.

A 24-in. thick concrete floor

poured in the shaft was heavily reinforced with 12WF53 beams.

Grow had sunk the shaft completely in free air, but they couldn't break away into the tunnel headings because the surrounding silt at the tunnel level could not be dewatered. The 80-ft deep well outside the shaft had dewatered the previous strata lying above and below the silt but could not drain the saturated silt. So the operation had to go under air from then on.

#### Starting the Headings

Switching from the open shaft operation to tunnels under air involved several steps.

The first move was to make the bottom part of the shaft airtight. They poured a 15-in. reinforced concrete lining around the inside of the sheet piling and capped that section of the shaft with a concrete roof.

The roof had a 10x13-ft hatch in it that was closed with a portable steel hatch cover. The cover could be removed when the air was off so big equipment like the shields and forms could pass through. There were also two air locks in the roof—a muck lock in the hatch cover and a smaller man lock beside the hatch.

A crane lowered the south shield to the bottom of the shaft. (There was room for only one shield down there so the headings had to be started one at a time.) Then they closed the hatch cover and put air on the bottom section of the shaft. Pressure was about 15 psi during initial operations.

Next the crews mined into the south heading about 100 ft with the shield. They breasted the face



LINER PLATE—Reinforcing strip, welded to each plate (right), resists push of jack.

at that point with a double wall of timber separated by a layer of bagged gravel and hay. They also concreted the tunnel up to the shield, using 8½-ft dia liner plate as forms. At the same time they mined an oversize (13-ft dia) drift in the north side of the shaft just deep enough to make room for the north shield.

Then they took the air off the shaft, opened the hatch cover, and lowered the north shield into the drift. They also lowered the regular full-circle telescopic concrete lining forms for both headings and put them back to back in the south heading. Then they put the air back on the shaft.

With both shields in position, the crews mined to make room for the tunnel locks, continuing on both sides until the south heading was in 250 ft and the north heading had reached 150 ft. The tunnel headings were then concreted, using the regular forms, to within 15 ft of the shields. Again they double-breasted both faces and the air was taken off.

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The tunnel locks were then constructed in free air using steel doors and concrete bulkheads. Each lock is 30 ft long inside and is located 40 ft from the shaft.

With the air locks completed, air pressure in each heading could be controlled independently and the shaft was now open to free air.

#### Mining

Grow crews seem to encounter a different face every day. They have hit sand, saturated silt, and layers of heavy boulders. Sometimes they find all three at the face at the same time. So their progress has varied widely—from 50 to 120 ft per week.

All mining is done by hand to prevent disturbance of facilities and buildings above the tunnel. Most of the time they work behind full breasting to prevent loss of ground. This technique, including the use of the shields, has caused practically no subsidence of soil above the tunnel.

The shields are made by Mayo and are 12 ft outside dia. They are propelled forward 16 in. (the width of the liner plates) at a time by twelve 100-ton hydraulic jacks. The jacks are designed to operate at 10,000 psi but generally operate closer to 3,000 psi.

Jacking is a tricky operation for several reasons. In the first place, continued on page 152 Cut Costs from the ground up

with JOHN DEERE Tractor-Loaders

Pass the shingles . . . finish-grade the grounds and driveway . . . seed the yard! From the day the foundation is staked out, to the moment the home is sold, the engine hardly cools on this versatile John Deere Tractor. It makes short work of landscaping, keeps materials moving, man power busy and productive, too.

The weight and size of John Deere Industrial Tractors make them ideal for use by builders. You can work close to foundations and grade over septic systems without danger. Fuel economy is outstanding in both Diesel and gasoline models. And all units, available with a wide choice of equipment, can be purchased through the John Deere Credit Plan.

Ask your John Deere industrial dealer for a demonstration on your job!

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- · Heaped Capacity
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- 2000 lbs.
- Maximum Dumping Height
- 9 foot, 7-1/4 inches
- · Positive Shakeout Action, Welded-on Cutting Edge



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Dumped from fullheight position, the 7/8-yard bucket returns to 9-degree digging angle by boom control only. In grading, boom control alone raises and dumps bucket. Rollback of 35 degrees at ground level for great breakout pawer.



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Please send me your latest literature on John Deere Tractors and Equipment for contractors and builders, and facts on the John Deere Credit Plan.

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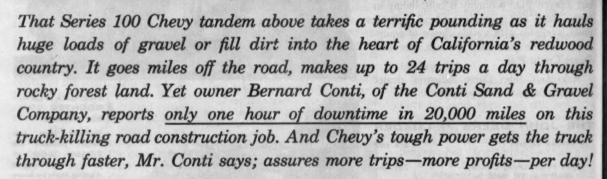
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# Chevy power is tough-

and <u>proves</u> it on bruising off-the-road hauls!



Hauling outsized loads of fill dirt through California's forests calls for a heavy-duty truck that's rock-rugged and powerful as they come; one that's soundly built down to the last bolt. And the Conti Sand & Gravel Company bears witness to the fact that Chevrolet is just such a truck. They're completely satisfied with their Series 100 model, from the dependable pulling power of the big 230-h.p. Workmaster V8 to the work-whipping qualities of the tough-built chassis components. And you'll be equally satisfied with whichever

Chevy heavyweight or middleweight your work requires!

Mr. Conti indicates that Chevrolet's Powermatic\* transmission is of special importance in this rugged service. It helps him to bull through the tough spots with exceptional ease. This fully automatic 6-speed transmission virtually eliminates manual gearshifting! It also provides a Hydraulic Retarder that helps you control truck speed and saves wear on the service brakes.

\*Optional at extra cost, Series 50, 60, 70, 80, 90 and 100 models.

to

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# No job's too tough for a



# Chevy's powered to cut costs and keep going on your tough off-the-road hauls!

That's for sure, whether you use mighty middleweights or high-capacity heavyweights-whether you prefer V8's or 6's.

Take Chevrolet's 1959 big-truck V8's, for example. As indicated by that tough truck job pictured above, these modern engines are out to whip any work that comes their way. They've got what it takes to do it. The shortest piston stroke of any comparable truck V8's: a sure sign of more work on less fuel. Compact design

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that cuts down on truck weight and helps assure the biggest possible payloads. Scores of up-to-the-minute features that know how to trim overhead: full-flow oil filter, hydraulic valve lifters, hard-faced exhaust valves and hardened valve seats,

extreme-duty Moraine 400 bearings, rotor-controlled governor, overspeed warning light and many more.

And with a complete lineup of modern V8 powerplants -including 160-h.p. Trademaster, 160-h.p. HD Taskmaster, 175-h.p. HD Super Taskmaster, 185-h.p. Workmaster Special and 230-h.p. Workmaster-Chevy can match the engine to your work, ideally.



Or if you prefer 6's, Chevy's still your best bet. Standard in Series 40 models is the 135-h.p. Thriftmaster 6, better than ever for '59 with a new Economy-Contoured camshaft that improves gas economy by 10%! And in Series 60 there's a new

edition of the 150-h.p. Johmaster 6. It offers new durability stemming from new tougher built pistons and Stellite-faced exhaust valves. Both of these famous 6's provide plenty of hard-pulling torque.

Six or V8, you'll go a long way before you see the likes of this '59 Chevy engine lineup. Actually, there's only one best place to go for all your trucking needs -and that's to your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

# Chevrolet truck! CHEVROLET





STARTING THE HEADING—Crew, working under air, tidies up shaft after hand mining first section of heading. Timber breasting held face during the mining operation.



LINING THE HEADING-Reinforcing is in place for first 100 ft of tunnel. Arch forms here will be improvised from liner plates. Full-circle forms will be used later.

#### TUNNELERS BATTLE TRICKY SOIL ... continued from page 148

Grow is using the specified liner plate, but these will buckle under the pressure of the jack if unreinforced. The plate is ¼-in. thick corrugated pressed steel, supplied by Commercial Shearing & Stamping Co., Bethlehem Steel, and Truscon Division of Republic Steel. It is placed in 12-

ft dia rings. To prevent the plates from buckling during the jacking, Grow welds %-in. steel flat bars to the center of the plates for reinforcement.

Also there are seven 100-ft radius curves to get around. This requires careful differential manipulation of the jacks in order to turn the shield, and a slightly wider excavation on the inside of the curve. To the contractor's knowledge, this is the sharpest curve ever negotiated by a shield.

The shield has a tendency to rotate as it goes forward. Several times it has become so tilted that the crew has had to mine an oversize drift and jack the shield into it in order to straighten it.

The water table averages about 25 ft above the subgrade of the tunnel. In the north heading, the contractors have lowered it somewhat with deep wells and well-points sunk ahead of the tunnel. When they reach the new section of the contract they hope to be working in free air.

In the meantime they have kept up an air pressure ranging from 2 to 17 psi. Generally speaking the pressure corresponds to the hydrostatic head at about the spring line, so there is always some water coming in at the bottom of the tunnel. The seepage rate varies from 20 to 100 gpm. Two 3-in., 10-hp electric pumps, a Jaeger and a Flygt, remove the water from the shaft, through a 3-in. blow line. The shaft serves as a sump for the discharge from the heading.

#### Mucking

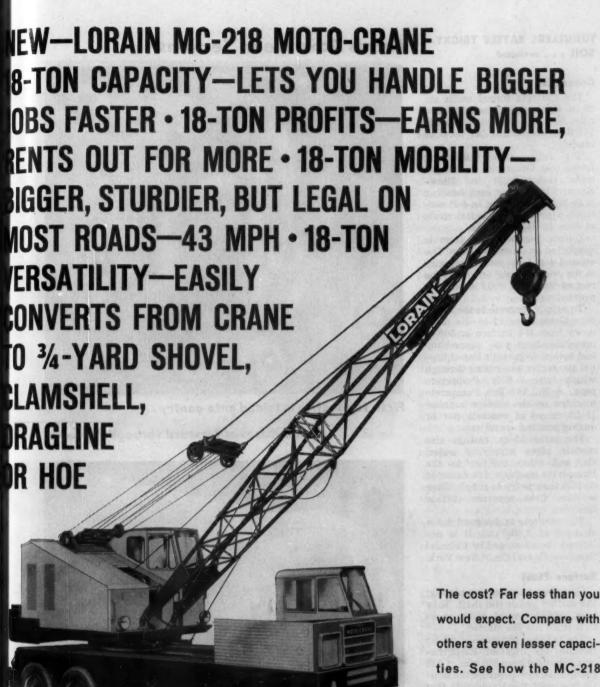
Miners using hand shovels or Ingersoll-Rand pneumatic spades remove the muck from the face and shovel it onto an 18-in. by 20-ft Farquhar muck conveyor powered by an Ingersoll-Rand air motor. The conveyor loads the spoil into 2-yd Mayo muck cars on rails.

A battery-driven, 6-ton Greensburg locomotive hauls the loaded cars, two at a time, back to the air lock. From here the cars are moved by hand the short distance to the center of the shaft, to be hoisted out by crane.

There is comparatively little traffic so the track system is simple. It is a single track, 24-in. gage, 30-lb rail most of the way. There are several sidings at intervals. Between the lock and the shaft a No. 4 frog forms a Y-switch connecting to a double track that runs into the shaft.

At the shaft, the Lima crane on the surface lifts out the loaded cars and dumps them on the ground. Every morning, a Michigan tractor shovel loads this spoil into trucks for disposal. Total amount of excavation from the tunnel will be 25,000 cu yd.

continued on page 154



would expect. Compare with others at even lesser capacities. See how the MC-218 stands out! For details see your Lorain distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

#### TUNNELERS BATTLE TRICKY SOIL . . . continued

#### Concreting

The concrete tunnel walls are 18 in. thick, reinforced with two rings of No. 7 bars that provide 240 lb of reinforcing per lin ft of tunnel.

The full - circle telescoping forms that Grow has on the job were custom-built by Blaw-Knox. The form in each heading is 28 ft long, built up in 4-ft sections. Grow pours the full circle at once in 24-ft lengths.

During the pour the form is supported on concrete blocks. The unused 4-ft form section remains in the previous pour and holds the rest of the form rigid enough to prevent uplift.

To supply concrete to the headings, Grow drive 12-in. dia pipes down from the surface at 500-ft intervals. Each pipe, capped top and bottom to prevent loss of tunnel air, serves as a casing through which runs a 6-in. Pumpcrete pipe. A No. 160 Rex Pumpcrete machine on the surface supplies 15-20 cu yd of concrete per hr during pouring operations.

The same 12-in. casings also contain pipes supplying water, air, and other utilities to the Pumpcrete machine. It's easier to do that than to try to supply these services from separate surface facilities.

The concrete is designed for a strength of 3,500 psi. It is delivered transit-mixed by Colonial Sand and Gravel Co. of New York.

#### Surface Plant

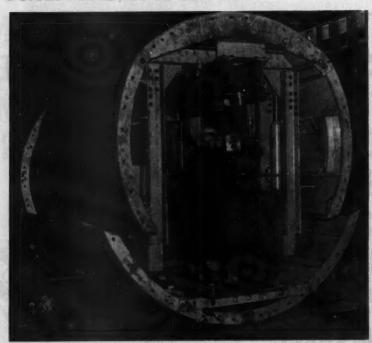
Grow has an extensive plant at the surface beside the shaft. They have added several compressors to it since the job started.

The original compressor set up included one Ingersoll-Rand machine that delivers 850 cfm at 125 psi and six low-pressure horizontal Ingersoll-Rand machines that deliver 1,450 cfm each. The horizontal machines are belt driven by a GM 6-71 diesel engine.

Five auxiliary compressors have been added. They include two LeRoi 600 machines, two portable Gardner-Denver 500's and a Fuller electric-powered rotary compressor with a 200-hp motor that delivers 1,750 cfm.

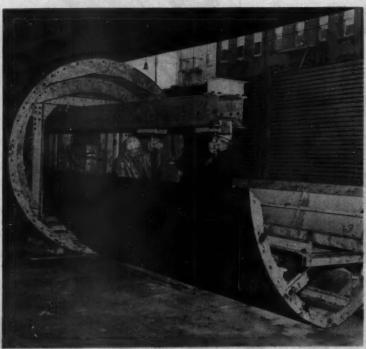
The whole plant can deliver 12,000 cfm of air. At the present time about 90% of the low pres-

#### **Forms Advance in Sections**



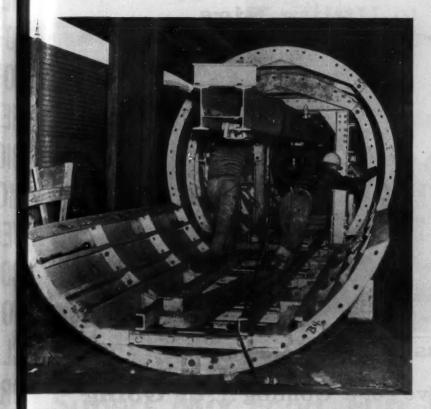
First, top section is folded onto gantry ...

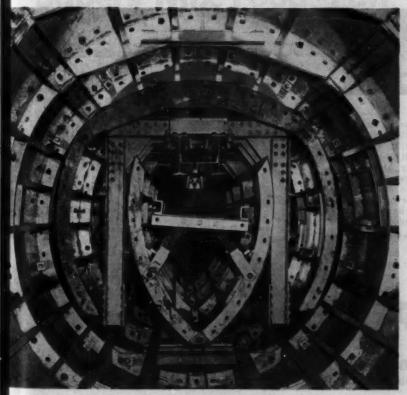
... then it moves forward through full form



Extended beam picks up bottom section . . .

... and slides it forward inside top section.





sure air is going to the south heading.

In addition to the compressors, four 20,000-cfm fans on the roof supply cooling air to the diesel engines. This is necessary because there is no other means of ventilation in the buildings; doors and windows have to remain closed to keep down noise in the neighborhood.

The compressed air goes through two aftercoolers and a moisture separator. Low-pressure air is delivered to the tunnel through four 8-in. lines, two to each heading. High-pressure air goes down in a 4-in. line to each heading.

The electric setup handles 2,000-kw, 208-v power, most of which is consumed by the Fuller compressor and the tunnel lighting system.

One of the problems with setting up such a big plant in a residential area is noise. To keep it to a minimum, Grow made special provisions in the building that houses the compressors. They used 12-in. concrete block walls with mortar joints and made the roof of 3-in. precast concrete planks.

To cut noise further they installed Maxim silencers on the air intakes to the compressors and on the diesel exhausts.

Grow works about 45 men on each shift, four shifts per day, five days a week. The underground crews work 3 hr at a time under air to make up their 6-hr daily shift.

#### Men on the Job

For Grow Construction Co., Inc., Robert Goodman is secretary and general manager. Henry J. Jacoby, vice president, designed the plant. George A. Fox, vice president and chief engineer, is in charge of the tunnel job. General superintendent is Harry Redwood. Andrew and Frank Catapano represent the co-venturers.

Frederick H. Zurmuhlen is commissioner of New York City's Dept. of Public Works. William A. O'Leary is director of the Division of Sewage Disposal. Leo Magid is engineer of construction, Henry G. Vermont is resident engineer, and James V. Marra is project engineer.

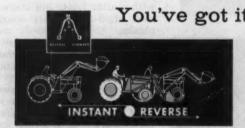
# M-F... has the only New Approach to Utility Rigs







REVERSING



You've got it Coming...or Going
on the New
OORK BULL 204

with Torque Converter

Massey-Ferguson again shows its leadership in the industrial field with the most important development ever made on industrial utility tractors. This all-new, field-proven Work Bull 204 changes directions instantly, but smoothly, at the touch of your toe — and has a torque converter to maintain correct power-to-load ratio. An efficient 3-point pedal control lets you select forward, reverse, or just engine acceleration. Your hands are free to

control the tractor or Davis Loader attachment.

The Work Bull 204 has a high-torque, 40-hp

engine with four equal speeds in either direction to provide a wide work range as well as a favorable road speed. It has full-time power steering, individual left and right brakes, and a hand throttle to pre-set engine rpm for operating attachments. The exclusive Ferguson 3-point hitch provides hydraulic draft control for rear-end attachments. Your choice of new model Davis Loaders, Backhoes, Scarifier-Scrapers, or other power-matched M-F attachments gives you the best all-around rig you could ever own. Write for the name of nearest dealer and see him soon.





MASSEY-FERGUSON INDUSTRIAL DIVISION 1009 SOUTH WEST STREET • WICHITA 13N, KANSAS At monthly meetings, equipment maintenance supervisors in the Los Angeles area get together for an informal dinner and discussion period to exchange ideas and learn about new equipment.



OPENING GUN—Club vice-president Sam Weatherbie, Osborn Construction Co., takes the floor near end of dinner at monthly meeting to start the ball rolling on discussion topics.

# Supers Mix Food, Fun, Business

NOT LONG AGO the telephone rang in the office of Leo W. Ryser, mechanical superintendent, Peter Kiewit Sons' Co., Los Angeles. The call was from an equipment maintenance supervisor in a competing construction company.

The caller wanted to know Ryser's opinion of a certain fire extinguisher powder which was then being peddled in the Los Angeles area. The price was low, but the caller was unfamiliar with the product and didn't know whether to buy or not.

Ryser advised the caller to check for a fire underwriters' seal of approval and, if it was not there, not to buy the product.

The powder didn't carry any underwriters' seal, so they didn't buy. It later turned out that the powder was mostly soda. The company saved money by avoiding a poor purchase.

Such instances of cooperation among competing construction companies have become more common in California since the establishment four years ago in Los Angeles of the Equipment Maintenance Supervisors Assn.

The association grew from an almost casual conversation among seven veteran construction men at a meeting of the Associated General Contractors in Los Angeles. Ryser found at that time many of his colleagues felt the need of getting together occasionally to exchange information and keep tabs on changing practices in equipment maintenance.

#### First Meeting

They decided to organize. Ten master mechanics attended the first meeting and elected Ryser the first president. Two months later, in February, 1956, they changed the name of the organization from the Master Mechanics' Association to EMSA. Since then, the organization has grown steadily.

Aims of the association are the same now as at its beginning: (1) to develop better maintenance personnel and practices; (2) to improve safety in the maintenance

and operation of heavy equipment; (3) to gain more freedom in the transferability of personnel from one area to another.

#### **Fast Growing**

The association grew in leaps and bounds under its successive presidents. Paul A. Fertig, then with Macco, now with Thompson-Cornwell Co., followed Ryser as president in 1956. David J. Moodie of J. A. Thompson & Sons took over in 1957. Last year Tunney I. Gibson of the Griffith Co. guided the organization.

Today the EMSA has grown to some 130 members and includes two new chapters. In 1956, Keith Robertson, one of the 10 founders, went to work in San Diego and started a branch there that today has about 40 members. In 1958, Ryser started the ball rolling in San Leandro, in the San Francisco Bay area. The chapter there already numbers about 75 mem.

"We feel that eventually there will be chapters in all 11 western

#### SUPER MIX FOOD, FUN, BUSINESS... continued

states," says Ryser. "We're hoping for one in Portland next."

A social hour precedes the monthly meeting. During this time, members drift around and chat with friends that they don't often see except at these monthly gatherings.

They come from miles around. Ruben Habeck, the only founding member present this time, drove 50 miles from Ventura to attend



FRIENDLY CHAT—Weatherbie chats with Ruben Habeck, Winston Bros. Co., (center) one of the founding members, and former president David J. Moodie, J. A. Thompsen Co., (right) during pre-dinner social hour.

# BOOBBORD



Small Spring Loaded



Heavy Duty Spring Loades



Oil or Dry



Heavy Duty



Teks-Off



Speed

power take-off and reduction gear in one complete unit. They are suitable for transmission of power from internal combustion engines where out-put shaft speeds required are lower than engine speeds. A heavy-duty, over-center clutch, with gear-tooth drive construction is used. Positive engagement or disengagement is accomplished by mechanical action of toggle arrangement. Various reduction ratios are available.

SEND FOR THIS HANDY BULLETIN Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER

1331 Eighteenth Ave., Rockford, III., U.S.A.

Export Sales Borg-Warner International — 36 So. Wabash, Chicago S, III.

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While waiting for late-comers to arrive, the men have a chance to discuss mutual problems and tell how they handled trouble on their jobs. Fred G. Lenzinger of Kemper Construction Co. recalled one such conversation from which he learned a valuable lesson.

"This fellow was telling me how some diesels were ruined by carelessness on a tunnel job," said Lenzinger. "You know, when you have diesels driving the power generator for locomotives on tunnel work, you're required to put scrubbers on the exhaust to purify the fumes.

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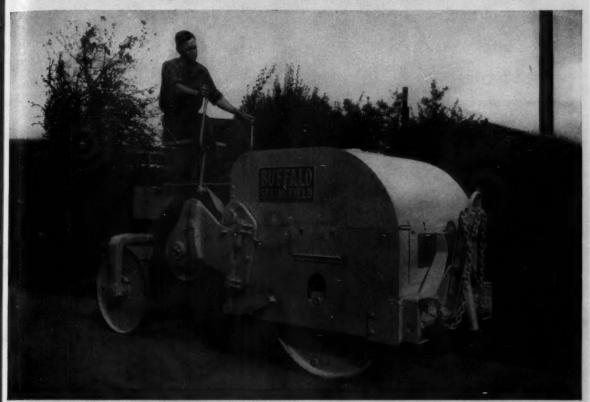
"Well, on this job, they had to move the locomotives backward; and instead of startig up the motor, they simply shoved the locomotive backward with another unit. When pushing the locomotive back, its engine turned over, sucking water in the scrubber tank up through the exhaust and into the cylinders. But there was no thought of this happening. Later they started up the engine and broke the pistons and block. And that's expensive.

"This fellow told me that in order to prevent a recurrence, they installed a check valve on the exhaust line. The check valve would be in closed position, not interfering with the exhaust, when the engine was running. But if the engine was reversed, the check valve would suck in air through the motor.

"Man, I can tell you, I immediately had check valves installed on all our diesel equipment."

After the dinner, Vice President Sam Weatherbie, of Osborn Construction Co., presided over a continued on page 162

# WHAT'S NEW in portable rollers? Meet the 4-6 ton KT-8...



# Towing wheels are never in the way because they FOLD AWAY!

Hydraulically powered towing wheels "fold away" into the main frame to give the new 4-6 ton Buffalo-Springfield® Model KT-8 Portable Tandem Roller some unique advantages never before offered in any other roller!

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The KT-8's exclusive "fold away" feature permits maximum ground clearance . . . and completely eliminates excessive overbang! The KT-8 can work in tight corners . . . around obstacles . . . up against high curbs and forms . . . without removing the wheels. And the new "fold away" design lets the operator actually see his work at all times!

Hydraulically powered towing every respect!

wheels save time on every move—speed work schedules. The KT-8 is ready for transporting in minutes... and ready to go to work just that fast at the next site!

There are other important features, too. Torque converter drive automatically matches power to grade and material variations . . . permits infinitely variable speeds from 0.5 to 5.3 mph in either direction. Heavy-duty, high-speed, low-torque clutches provide smooth reversing without grabbing. Wide faced bevel gears assure long, trouble-free operation. The KT-8 is built for maximum performance, dependability and durability in every respect!

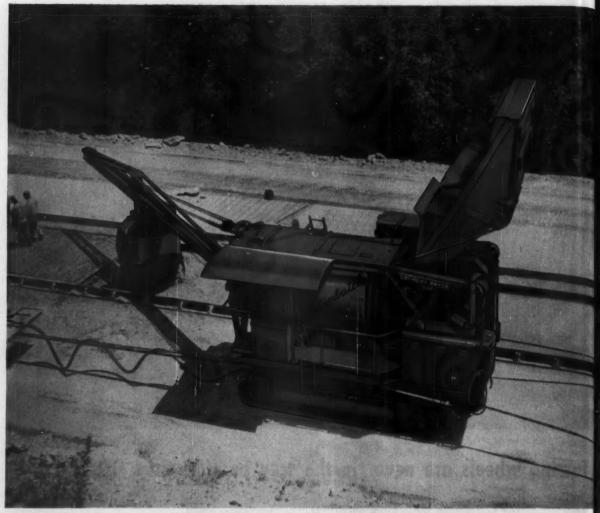


A new 3-5 ton Portable Tandem KT-7A is also available. While it does not have hydraulically-powered towing wheels, it does offer towing attachment as optional equipment. Attachment includes towing hitch with hydraulic jack, stub axle assemblies with pneumatic-tired wheels, and wedge blocks. See your Buffalo-Springfield distributor for a demonstration on either model — KT-7A or KT-8.



BUFFALO-SPRINGFIELD ROLLER CO.

DIVISION OF KOEHRING COMPANY . SPRINGFIELD, OHIO



Pouring concrete in strips 12 feet wide on a new expressway, Koehring 34-E twinbatch paver averaged 1100 feet per 8-hour day. 10-inch slab consisted of 8-inch mesh-reinforced base, 2-inch top course.

PLAN YOUR SPREAD FOR

# the heavy paving program ahead

Long-range outlook on the extensive road program, and new "jet-age" airbases, indicates a steadily-rising curve of construction activity in all areas. It also indicates plenty of paving business ahead for the contractor who is in a position to compete favorably in the bidding, and who can profitably complete contracts on schedule.

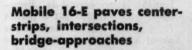
In planning your equipment spread, you can't afford to gamble on the production end of your job—at the paver, where every second counts. That's where the reserve production capacity of a Koehring 34-E twinbatch® protects your schedules and profits. It hits a top output of 86.7 batches an hour, on 60-second mixing cycle. This lets you pick up any lost time, when you need it, to offset normal job and material delays—maintain a high average speed throughout duration of the job—keep batch

plant, trucke and finishers working at peak efficiency. With twinbatch Autocycle control, every mixing operation is automatic, accurate, and fast. Drum charging, mixing, transfer and discharge are all synchronized by Koehring Batchmeter, a simple timing device. 8-second skip-hoist speeds charging. Big, double-door bucket and wide-swinging boom speed concrete distribution on the grade. What's more, accessibility of every paver maintenance point, plus heavy-duty construction, all help to keep paving jobs rolling on schedule.

You'll find there's no substitute for the steady output, speed and economy you can get with 34-E twinbatch pavers on your big-production highway and airport contracts. Talk it over with your Koehring distributor. He has more information that will interest you. Why not call him today?

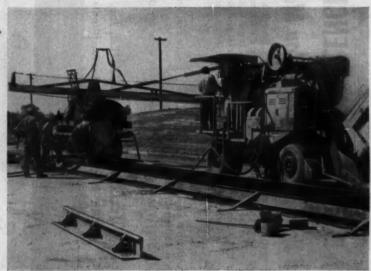
#### Transverse Finisher has been added to Koehring paving "package"

Meet the latest addition to the big Koehring line of paving equipment—the Transverse Finisher. One-man operated, this fast-working unit provides efficient, low-cost finishing for all paving jobs. It produces a slab surface from 10 to 30 feet wide that meets the most rigid highway and airport specifications. 2 adjustable oscillating screeds finish all types of concrete. A single lever control assures uniform crown transitions. There are 3 traction speeds for finishing—additional high speed for traveling. Finisher also has rubber-tired transport wheels that quickly lower and raise hydraulically.



On street and highway jobs, there's always extra concrete to be laid in addition to the main slab, such as curbs, gutters, center-strips, scattered intersections, approaches to driveways, bridges and side-roads. Consider the time-saving flexibility you can get with a rubber-tired twinbatch in your paving spread. This Koehring 16-E is as mobile as your batch trucks — can get back on the new slab in as little as 7 days to do clean-up work, or pave adjoining strips. Also has high elevated discharge, pours into overhead hoppers, forms, chutes. You'll find its usefulness unlimited as a utility unit . . . or as a general-purpose paver.





#### "Timely" precision-finishing -

is important on every paving job. Operating at almost twice the speed of a 34-E paver, Koehring Longitudinal Finisher handles all practical consistencies of concrete — harsh, wet or dry — produces smooth, mechanically-accurate slab with uniform crown transitions.





#### SUPERS MIX FOOD, FUN, BUSINESS . . . continued from page 158

brief business session. Then Ralph Currier, service manager of Shaw Sales & Service, dealers in heavy construction equipment, presented a problem he wanted discussed by the 46 members present at the meeting. Problem was the difficulty of obtaining transportation permits for moving heavy equipment over highways.

'The problem becomes sticky most often after completion of a freeway," Currier said. "Where no freeways exist, we can get permits from one place—the state to use the road. But after a freeway is completed, the responsibility for administration of the old road is usually turned over to the small towns that line the road. And some of these small-town officials don't even know what a transportation permit is. Sometimes you have to get a permit from every one of these towns along a road you want to move your equipment on. It costs \$5 a crack on the average, and ordinarily takes a man all day to make the arrangement."

#### Offers Idea

Albert L. Hess, of Weber Trailways & Mfg., Co., rose to offer a suggestion. "Why not start at the top? If the State will authorize a permit, the cities will follow their lead."

Hess had hardly sat down when Weatherbie appointed him a "committee of one" to arrange to have a transportation permit expert address the next meeting and advise the members how to handle the problem.

To close the meeting, R. G. Kuhnmuench, manager of Cal-Rex Machinery Sales, Chain Belt Co., gave a brief talk and showed a color movie on a slip-form concrete paver.

#### They Want to Learn

Ryser explained later that the EMSA usually tries to have an equipment or lubrication specialist speak at the meetings. "You see, we know the equipment pretty well, but there's always more to learn. We want to make sure that we're using the proper oil or grease in a particular piece of machinery. That gets back to one of the aims of the organization, the one about improving maintenance practices. We improve through learning from the experts—and from each other."

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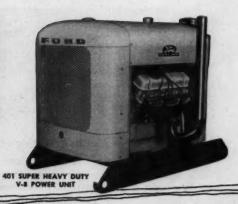
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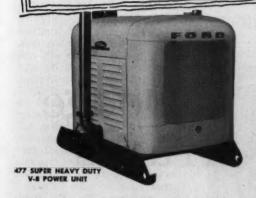
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# Announcing...the addition of four new FORD Heavy Duty Power Units!





# Now . . . <u>all</u> Ford Industrial Engines are available as engine assemblies or power units!

• These four new power units are built to handle your toughest work dependably and at low cost. Now from 134 to 534 cubic inches, there's a Ford power unit right for your job. The Super Heavy Duty V-8's, for example, offer many advances like fully machined combustion chambers, new fuel and lubrication systems, and more horsepower per pound of engine weight than ever before. Ford power units and engine assemblies are available

Ford power units and engine assemblies are available with SAE housings, HD power take-offs, and 5- and 8-speed transmissions. The 3 Super Heavy Duty V-8's can be equipped with a new 6-speed Transmatic Drive. And for fast parts delivery or on-the-job repairs, remember, there's always a Ford Dealer nearby to give the service you need when you need it.





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272 V-8 POWER UNIT

INDUSTRIAL ENGINE DEPARTMENT • FORD Division of FORD MOTOR COMPANY
P. O. Box 598, Dearborn, Michigan

223 6-CYL POWER UNIT

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!

# 29,000 lbs. - and all muscle!

Bring on those gruelling, earth-moving, profit-making jobs and just watch this mighty Dodge D800 dump truck clean them up.

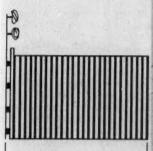
It weighs in at 29,000 lbs. maximum G.V.W. It's big and tough. It's packed with power and the right equipment to get the job done in short order. Special transmission, if you need it—special axle, springs, brakes—whatever your kind of trucking requires.

Big-load hauling was never easier...never more profitable...than in new, improved '59 Dodge "Job-Rated" heavy-duty trucks with G.V.W.'s to 49,000 lbs., G.C.W.'s to 65,000 lbs.

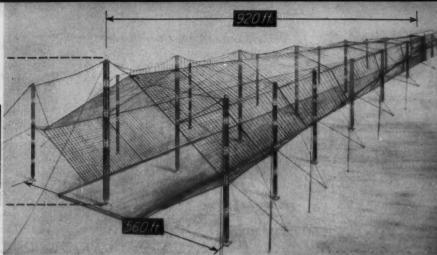
Your Dodge dealer has full information. He'd like nothing better than to talk to you, and tell you why . . .

To provide maximum flexibility in loaded, off-road service and at unloaded highway speeds, a 4-speed auxiliary transmission is now offered for all conventional and tandem models in the Dodge 800 and 900 service. Another benefit

for more truck buyers!



IT'S BIG—Tall as a 25-story building, long as three football fields, wide as two city blocks, it's big in every way.



And for the contractor...

# It's a Tricky, Specialized Job

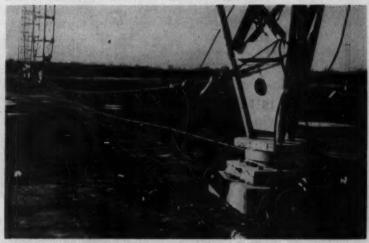
IN THE ROLLING HILLS of southern Maryland, a group of steel towers pointing toward the sky like rockets poised for the blast-off marks the site of an unusual construction job.

The towers will support a wire net radio antenna. It's called a tapered aperture horn antenna. The reflecting surface is a funnel-shaped wire grid suspended from the towers by catenary cables and hangers. The antenna is the first of its kind—others will follow at other stations around the country when tests are complete.

John F. Beasely Construction Co., of Muskogee, Okla., sent a picked crew of experienced tower erectors to the site at LaPlata, Md., to put up the antenna. The Army Signal Corps Station there is the largest radio receiving installation in the world. Some of the men had a hand in erecting the other towers that dot the surrounding fields. But they never saw anything like this one before.

The horn-shaped net contains about 83 miles of copper wire. More than 500 separate lengths of wire criss-cross to form the grid. The contractor has to lay out each of these wires individually, then tie them all together to form the net. Each tie has to be made at the proper place so that the net will stretch out in the required shape when suspended from the towers. It's a painstaking job.

The towers are set in three rows, with six towers in each row. Distance between the out-



BETWEEN THE TOWERS—Catenary cable stretched between towers will support funnel, shaped wire grid, Winches at base of center towers will hoist cables and net up into place.

side rows of towers tapers from 560 ft at the open end of the horn to 75 ft at the narrow end. Tower spacing along the rows is about 160 ft.

Length of the antenna itself is 920 ft. A rectangular building at the tip of the horn feeds the signal picked up by the net to the radio receiving equipment. Framework of the building consists of six steel columns that support steel trusses at the top. The building is enclosed with galvanized sheet steel. Entire length of the antenna, including the building, is 1,000 ft.

Height of the towers decreases from the open end of the horn to the closed tip. The towers in the center row vary from 276 ft to 119½ ft. In the outside rows, towers range in height from 188 ft to 97½ ft.

Each tower consists of three solid steel legs connected by diagonal and horizontal struts. The triangular tower sections vary in size. Shorter towers in the outside rows measure 2 ft on a side; bigger towers in the center row have 8-ft sides. The steel legs vary in thickness from 2½ to 5 in. The bracing is ¾ to 1-in. rods.

Towers in the outside row are held at two levels by guys anchored to concrete deadmen buried in the ground. Towers in the center row are guyed only at the top. Guys extend from their tops



MARKING PLATFORM—Parallel rows of wires nailed to planks of triangular platform divide grid wires into equal segments, marking locations of ties where wires cross.

#### SPECIALIZED JOB . . . continued

to the adjacent outside towers, stretching over the antenna net hung between the towers.

Tower erection was a snap for the seasoned crew that Beasley sent east to the job. Because of the guy arrangement, they erected the towers in the outside rows first, then put up the taller towers in the center row.

The towers arrived at the site in 24-ft-long sections. Truscon Division of Republic Steel Corp. handled the fabrication. Beasley assembled four sections on the ground and tilted up this lower portion of a tower onto its concrete base with a Bucyrus-Erie 38-B crane. A gin pole set on a platform at the top of the erected portion placed the upper portions of the taller towers.

Three truck-mounted American Model 75 winches pulled the guys attached to the tower tight. Three pairs of guys hold each outside tower. One guy of each pair runs from the top of the tower; the other, from a point near the mid-height.

When all towers were up, workmen brought them to final plumb position by taking up or slacking off on the guys with the turnbuckles at the ends of the wires. Play in the turnbuckle permits shortening them 1 ft.

The contractor's crew spent just one month erecting the 18

towers. Time required to complete one tower varied from one to four days.

Now the 18-man crew is busy laying out and tieing together the wires that make up the antenna net. This is the difficult portion of the job.

Wires in the antenna net are No. 8 gage. About 85 wires run the length of the funnel-shaped horn. Spacing between these long wires varies from 8 ft at the open end to 16 in. as they converge towards the tip of the horn. Spac-

ing of the 422 wires that wrap around the horn is a uniform 24½ in.

To mark locations of ties where the wires cross, the contractor built a timber marking platform where a crew lays out the wires. The platform is built up like a wood floor on the ground. Joists are 2x6's on 3-ft centers; they rest on 6x8's spaced at 8 ft. Thirty strips of 1x8 planking on 1-ft centers run on top of the joists to form the surface of the platform. The floor is roughly triangular in shape, measuring 30 ft at the base and 106 ft on the long side perpendicular to the base.

Parallel marking wires, also spaced on 1-ft centers, are laid out in straight lines with a transit and nailed to the planks. These marking wires divide an antenna wire laid out on the platform at an angle to the planks into equal segments.

Changing the angle of the antenna wire changes the length of the segments. When the wire is stretched nearly parallel to the planks, it is divided into a few long segments. As the wire is moved out along the base of the triangular marking platform, the parallel marking wires divide it into smaller segments. In this way—by varying the angle of placement—the crew can mark the antenna wires into equal segments of any desired length.

Instead of actually measuring the angle of placement directly for each wire, workmen simply measure off a calculated distance along the base of the triangular platform. Then they string the antenna wire from the tip of the

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ANCHORAGE—Concrete deadmen buried in ground ancher pairs of guys that hold towers. Turnbuckles at ends of wires provide I ft leeway for adjusting guys to plumb towers.

This is the Brays Bayou Channel Paving Project in Houston, Texas, being constructed by OTCO, Contractors, of Houston.

A MORETRENCH WELLPOINT SYSTEM — 2800' of it—strung along the left hand side of the slope successfully dewaters the 70' wide ditch.

Dry Digging is Fast—Economical—Controlled. You can get it with a Moretrench Wellpoint System which guarantees your progress—in the dry. Wellpointing...
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SAVE \$200 A TON Make your own hot mix asphalt with this new WHITE plant and save about \$2.00 a ton. At its capacity of 240 tons a day, that's savings of \$480.00 a day. Thirty-one of those days pay for the L-20!

Produces any type mix you can get from a \$100,000 plant: AC, RC, MC, SC and emulsified for top course, base course, one course, or patch. Two men operate. Capacity is rated at a hot 315 degrees.

Available either portable or stationary, the L-20 will supply black-top for suburban streets, driveways, parking lots, school yards, or state highway maintenance. See nearest White distributor or mail coupon.





Manufacturers of quality construction equipment since 1925.

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White Manufacturing Company, Elkhart 6, Indiana

Please send literature on L-20 Asphalt Plant.

TROWELERS

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triangle to this point on the base and mark off the points where the wires cross.

Next step is laying out the marked wires on the ground between the towers. First the crew lays out the long wires that run the length of the antenna. Then they lay down the short cross wires and tie them to the long ones at the points previously marked on the platform. Altogether there are close to 90,000 ties in the net.

In this way they form the grid that makes up the two top panels—one on each side of the center towers—of the antenna. Each top panel is woven in one piece.

Specially designed copper clamping devices connect the ends of the cross wires to messenger cables that support the net. There are three messenger cables altogether: one common cable for both panels at the top, and one on each side. The messenger cables are suspended from the catenary cables that transfer the load of the net to the towers by short hangers. There is a catenary cable for each of the three messenger cables. Transverse reinforcing cables at each tower strengthen the net.

#### Winches Pull Net Up

When the two top panels are completed on the ground and connected to the supporting cables, a winch at the bottom of each center tower will pull them up into position. Then the crew will lay out and tie together the wires in the two bottom panels of the net in the same way. The bottom panels hang from the messenger cables at each side and are anchored to concrete curbing along each side of an asphalt mat that runs through the center of the structure.

The bottom surface of the hom consists of expanded copper mesh secured to the flat asphalt mat. The copper mesh on the bottom is connected to the side panels by short wire jumpers at each lateral

Laying out the net and raising it will take the contractor about three months. The antenna should be completed by next month,

Superintendent in charge at the site for Beasley is Tom McCullem. The erection crew works from plans drawn up by Developmental Engineering Corp. of Washington, D.C.

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NEW FORD 10 Ft., 12 Ft., 14 Ft. BACKHOES

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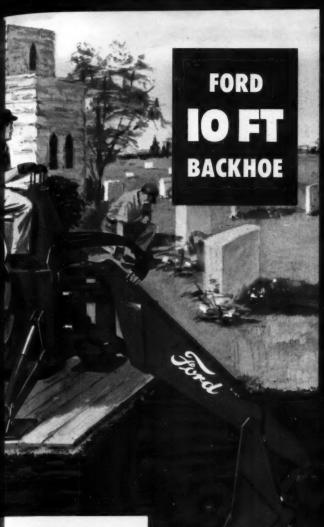
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# ALL FORDS ARE

#### Fast Digging

Long reach, free drop, unmatched bucket capacities, positive swing and boom control, Ford's exclusive placement of pivot points and hydraulic cylinders all work together for faster production and greater lengths of trench from a single setting.

#### Precision Digging

Instant, accurate control of boom, dipstick and bucket lets you hold trench floors to exact grade, dig plumb walls and square corners, work around underground lines, reduce costly hand finishing.

#### **Problem Digging**

VE

Wide-stance stabilizers and full-power 185° swing are among the many superior Ford features which help you undercut paved surfaces, dig at full speed on slopes or at right angles, work close to buildings, in cramped quarters, on soft ground.

### **FORD 10 FT. BACKHO**E

Dimensional specifications with Ford Workmaster Tractor

Transport length: 17'1"

Transport height: 10'4"

Seat to ground: 54"

Axle to swing post: 3'2"

Max. reach from axle: 17'4"

Reach, pivot to bucket teeth: 14'2"

Max. undercut forward of pivot: 5'7"

Reach outside tire @ 90°;

Hydraulic pump capacity, 14 gpm @ 1700 rpm

Stabilizer, lift, bucket and crowd cylinders (double acting): piston 3" dia, rod 134" dia.

Swing cylinders (single acting): piston 3½" dia, rod 1½" dia.

Features offered by all Ford 10', 12' and 14' backboes are listed on last page.

#### FORD 10 FT. COMPARISON CHART

FORD 10'	BACKHOE A	BACKHOE
14'3"	11'1"	11'
10'8"	9'8"	9'8"
14'2"	12'4"	13"
185°	140°	180°
9'5"	7'4"	8'8"
131/2"	10"	6"
120"	78"	83"
77"	77"	84"
2397 lbs.	2110 lbs.	1725 lbs.
2.5	2.3	1.75
4.5	3.2	2.75
6.0	4.5	3.75
	14'3" 10'8" 14'2" 185° 9'5" 13½" 120" 77" 2397 lbs. 2.5 4.5	14'3" 11'1" 10'8" 9'8" 14'2" 12'4" 185° 140° 9'5" 7'4" 13½" 10" 120" 78" 77" 77" 2397 lbs. 2110 lbs. 2.5 2.3 4.5 3.2

#### INTEGRATED HYDRAULIC PACKAGES

Ford backhoes use an integrated hydraulic system with front-mounted loaders; or are supplied with separate pump, drive and reservoir for tractors without loaders:

- Ford 10' Backhoe with Ford Extra Heavy Duty Loader on Ford NAA, 600, 601, 800 and 801 Tractors.
- 2 Ford 10' and 12' Backhoes with same loader on same tractors, but with bigger pump.
- 3 All Ford Backhoes with or without Ford Super-Duty Loader on Ford Industrial Tractors.
- All Ford Backhoes without loader on Fordson Major Diesel and Fordson Power Major Tractors.

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> Short, helps preven preven swing



#### FORD 12 FT. BACKHOE

Dimensional specifications with Ford Powermaster Tractor

Transport length: 16'10" Transport height: 11'5" Seat to ground: 54" Axle to swing post: 3'2" Max. reach from axle: 19'

Reach, pivot to bucket teeth: 15'10" Max. undercut forward of pivot: 5'10" Reach outside tire @ 90°: 13'1"

Hydraulic pump capacity: 14 gpm @ 1700 rpm Stabilizer, lift and crowd cylinders (double acting): piston 31/2" dia., rod 2" dia. Bucket cylinders (double acting): piston 3" dia., rod 13/4" dia. Swing cylinders (single acting): piston 4" dia., rod 1½" dia.

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FORD 12 FT. COMPARISON CHART

FEATURE	FORD 12'	BACKHOE C	BACKHOE D	BACKHOE E	BACKHOE F	BACKHOE G	BACKHOE H	
Max. length 40" excavation	16'3"	13'2"	11'	11'	12'4"	12'11"		
Max. digging depth	12'5"	11'	11′5″	11'5"	12'7"	11'6"	12"	
Max. reach from swing post	15'10"	15'11"	13'10"	13'10"	15′7″	15'5"	14'4"	
Max. swing	185°	180°	140°-180°	180°-200°	180°	180°	188°	
Max. loading height	10'7"	10'	8'2"	7'11"	9'1"	7'5"	9'11"	
Ground clearance	131/2"	11"	10"	10"	N.A.	10"	12%"	
Max. stabilizer spread	120"	95"	86"	86"	102"	110"	98"	
Approx. weight (installed with bucket).	2685 lbs.	N.A.	1900 lbs.	1900 lbs.	2095 lbs.	2969 lbs.	3001 lbs.	
Struck capacity (cu. ft.)								
12" ditching bucket	2.5	2.5	2	2	2	2	2	
18" ditching bucket	4.5	4	3	3	3.5	3.25	3.5	
24" ditching bucket	6	5.5	4.5	4.5	5	4.5	5	

### FORD 14 FT. BACKHOE

Dimensional and performance specifications with Ford Industrial Tractor

Transport length: 18'4" Transport height: 12'7" Seat to ground: 54"

Axle to swing post: 3'2" Max. reach from axle: 20'8"

Max. undercut forward of pivot: 5'10" Reach outside tire @ 90°: 14'10"

Hydraulic pump capacity: 16.4 gpm @ 1700 rpm

Stabilizer and bucket cylinders (double acting): piston 3½" dia., rod 2" dia.

Lift and crowd cylinders (double acting): piston 4" dia., rod 21/4" dia.

Swing cylinders (single acting): piston 4½" dia., rod 2" dia.

Max. length 40" excavation: 16'2" Max. digging depth: 14'1"

Max. reach from swing post: 17'6" Max. swing: 185°

Max. loading height: 11'8" Ground clearance: 131/2' Max. stabilizer spread: 120"

Min. stabilizer spread (transport): 77" Approx. weight (installed w/bucket): 2905 lbs.

Struck capacity (cu. ft.) 12" ditching bucket: 2.5

18" ditching bucket: 4.5 24" ditching bucket: 6.0

24" high capacity ditching bucket: 7.0



# **FORD 14 FT. COMPARISON CHART**

(there's never been anything approaching this model short of big expensive equipment)



not to dipper stick.

efficient, faster digging.

Four Major Curl Advantages

2. Precise bucket positioning.

bucket rotation.

drag.

4. Permits combination of work actions for

 Power from largest side of piston when curling bucket through ground resistance.

3. Maintains high average tooth force during

Clean sweep action; no interference; no heel

### HERE ARE 55 EXCELLENT REASONS WHY A FORD BACKHOE WILL DO YOUR JOB BEST!

#### Quick Hitch

- 1. Close-coupled for good balance, stability.
- 2. Clamp-type hitch; no pins or bolts.
- 3. One man puts on or off in 5 minutes; no special tools.
- 4. Self-storing unit.
- No need to disconnect pump drive; just connect un-coupled lines together and oil recirculates.
- 6. No interference with 3-point hitch; always ready for action.

#### Cool Hydraulic System

- 7. Clean design, shortest possible lines, no sharp bends. All help keep oil cool.
- 8. Ample oil capacity to provide full flow, maximum cycle speeds, and to prevent pump cavitation.
- Six-spool multi-purpose body valve for top speed cycling, positive control, excellent throttling.
- 10. Main relief valve backed up by separate relief valves in hydraulic lift and crowd circuits.
- 11. No pipe, pipe threads or pipe fittings; all straight threads with "O" rings or tube fittings. Tight seal, easy
- 12. Minimum number of hose sizes to simplify owner maintenance.
- 13. All lines short as possible to reduce friction power losses.
- Double acting cylinders throughout except for single acting swing cylinders.
- All cylinders positioned for maximum force during stroke of greatest resistance.
- 16. Chevron type packing with phenolic resin back-up rings.

#### Rugged Construction

- 17. Backed up by Ford service warranty; one-stop parts and service; traditional good trade-in value.
- Large replaceable pivot pins and case-hardened bushings at all wear points.
- 19. Hydraulic lines inside box members for protection where possible.
- 20. Control shroud cover easily removed to service
- 21. Heavy duty swing post is shock resistant malleable iron casting.
- 22. Main swing pivot pins 1¾" dia.; special thrust washer in upper bearing resists wear from boom swing.
- 23. Boom, dipper stick and stabilizer arms all welded high strength box sections for maximum brawn, minimum weight.
- 24. Box section reinforcements at main pivot points of swing post, boom and dipper stick.

#### **Operator Convenience**

- 25. All models have adjustable, full-cushioned seat with back rest.
- 26. Plenty of leg room on anti-skid deck.
- 27. Superior work visibility.
- 28. Easy to reach tractor throttle, loader controls, etc. from seat of backhoe.

#### Unmatched Stability

- 29. Widest stabilizer stance on market.
- 30. Narrowest stabilizer transport width on market.
- 31. Individual control of stabilizers for leveling on slopes. uneven ground.
- 32. Wrist action pivot between each arm and stabilizer pad
- gives full ground contact.

  33. Choice of five stabilizer pads to adapt for any type of

#### Superior Lift

- 34. Hydraulic power from big end of piston on lift stroke, when boom meets greatest resistance.
- 35. Free fall for speed and breaking ground.
- 36. Straight-up boom transport; closer to tractor center of
- gravity for stability.

  37. Unmatched dump height.
- 38. Unmatched undercutting capacity.

#### Superior Crowd

- 39. Hydraulic power from big end of piston on crowd
- stroke, when dipstick meets greatest resistance.

  40. Crowd force directed to lower end of dipper stick, near bucket pivot.
- 41. Cylinder location gives excellent leverage.
- 42. Resistance force transferred to heavy boom, not to dipper stick.
- 43. Crowd advantages are a vital part of Ford's over-all digging efficiency, permit faster production.

#### Superior Curl

- 44. Four-bar actuating linkage gives precise bucket posi-
- 45. Hydraulic power from big end of piston when curling teeth through greatest resistance.

  46. Maintains high average bucket tooth force.
- 47. Clean sweep action; no interference; no heel drag.

#### **Biggest Bucket Capacities**

- 48. Choice of 12", 18" and 24" standard ditching buckets 24" high capacity ditching bucket for 14' model; 32' and 36" bell hole and cemetery buckets.
- 49. Replaceable wear points on teeth; bucket mouth flared to reduce friction.

#### Superior Swing

- 50. Positive, instant control; no delay getting bucket back into trench for another payload.
- 51. Fine throttling or feathering of swing control valve
- 52. Combination flow and cushion valve maintains a solid oil circuit, prevents drifting.
- 53. Short, single-link connection between each cylinder and swing post; no chain or cable to wear excessively
  54. Short linkage reduces number of pivot points to four
  55. Retarding device on swing control lever automatically
- brakes swing to prevent slamming into stops. Operato can over-ride to get maximum swing.

Ask your Ford Tractor and Equipment Dealer for more detailed specifications and literature on these new backhoes as well as for all the other new tractors, loaders and matching equipment in Ford's new line for '59. See him today, or write to Ford Motor Company, Industrial Sales Department, Birmingham, Michigan.

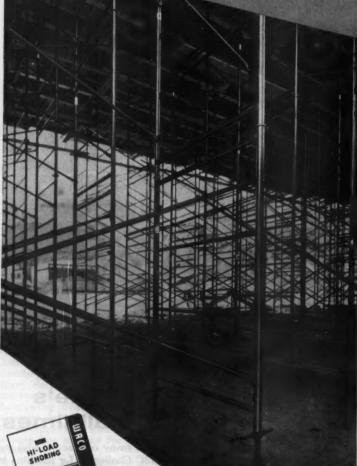
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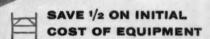


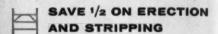
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# CAVE 1/2















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TODAY ...



SHOYELING—Lima shovel with  $2^{1}/2$ -yd dipper loads coarse glacial till from river bank into an Athey side dump for haul to the runway extension fill area about a mile away.

# Till Makes Fill for Arctic Job

By LESTER B. LEONARD Project Manager J. A. Jones-Danish Arctic

LET ME TELL YOU about glacial till. I'm an expert; I've been up to my ears in it for three years now.

We're using three different types of it as fill for a runway extension at Sandrestrom Air Force Base in Sondre Stromfjord here in Greenland.

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We've diverted a river so we can pull fine till from a river bed borrow area; we're shoveling coarse stuff from a mainland borrow bank; and we're blasting chunks of a consolidated till to crush and put to work as base course for asphaltic concrete runways. We have no choice; till is just about the only material that's available for fill in Greenland.

I'm project manager for the joint venture of J. A. Jones Construction Co. of Charlotte, N.C., and Danish-Arctic Constructors,

a six-contractor consortium from Copenhagen, Denmark. We're doing the \$7-million extension job for the Eastern Ocean District of the U.S. Army Corps of Engineers.

The job requires extending the 200-ft-wide runways 3,000 ft to take heavy jet planes that demand lots of landing room. Paving will consist of 2-in. base and 1½-in. surface courses of asphaltic concrete. But before it goes in we have to provide considerable fill. Fills average 20 ft, but many areas have to be built up 60 ft.

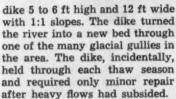
We've only a few months a year in which to work. But, that's a handicap we expected up around the Arctic Circle. More of a problem, in a way, is the fact that till is the only available fill material in the area. Let me give you an idea of what we have to do to get at and process it.

Engineers specified that the bottom quarter of the fill should consist of fine glacial till. Above that is a coarser glacial till. And, to top it off, there is a layer of crushed glacial till or stone 14 in. deep. Granite is available in limited quantities, but we have to use most of this as aggregates for asphaltic concrete.

The only place we could get the fine stuff that engineers wanted for the bottom of the fill was in the bed of the Morgan River, a large stream that flows into the fjord from which the area gets its name. This river, during the spring thaws, flows a mile wide. But when thaws are over the river narrows to about 10 ft. We decided that we could divert the river several hundred feet during its low-water period and remove the bed material for bottom fill.

We diverted the river two years ago by throwing out a dike a distance of 200 ft with several Lima cranes handling dragline buckets. The draglines built the





We then built a ramp from the dike down to the river bed and moved in six Lima shovels with 2½-yd buckets. These bite into the bed and load fine till into 10-yd Euclid and Mack trucks and a number of Athey and Caterpillar side and bottom dumps pulled by Caterpiller tractors. Haul is 1 mi to the fill area.

When material is dumped, Caterpillar D8 bulldozers spread and initially compact the fill. Four 2,500-gal water trucks pulled by D8's add water; Ferguson 100-ton pneumatic rollers provide

final compaction to each 12-in. lift of fill.

## Secondary Fill

Coarse till for the secondary fill is dug by the shovels from the river's banks. This material is loaded, hauled, and compacted in the same way as the fine till. But things change with the 14-in. surface course.

The surface course serves a dual purpose—it stabilizes the fill area and serves as subbase for the asphaltic concrete paving that will go on top.

This subbase comes from two sources—a tough strata of till outside the river and a granite quarry 4 mi from the fill area. Despite the till's toughness we are able to shovel most of it and load it into trucks for haul to a portable crushing plant we have set



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SHOOTING—Gardner-Denver and Chicago-Pneumatic wagon drills bore 2½-in.dia holes 40 ft deep into consolidated till to prepare shot that blasts material free.

up on the site. But we have to blast some of the till—and all of the granite.

We shoot the till and granite in the same way. We drill 30 to 40 holes of 2½-in. dia 40 ft deep on a 4x5-ft pattern with Chicago-Pneumatic and Gardner-Denver wagon drills.

We load each hole with ¾ lb of 40% dynamite for every yard we want to pull. We detonate each shot in a series of ten millisecond delays with electric blasting caps made in Denmark.

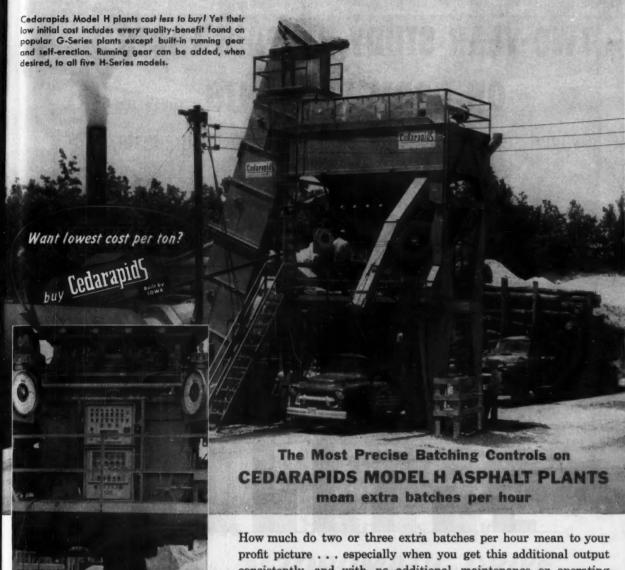
Each shot pulls an average of 4,000 yd of till or rock. We try to shoot every three days. Shot rock and till are loaded by Bucyrus-Erie 38-B shovels into haul trucks that carry it to two Cedarapids 100-tph portable crushers. These crushers reduce the material to -3" size and pass it on to transfer conveyors that discharge directly into trucks for haul to the fill area. Pneumatic rollers compact the crushed material, too. We expect to complete the extension sometime this year.

Equipment is worked on two 10-hr shifts daily. The remaining four hours of the day are spent in equipment lube. No repairs other than minor ones are made on the machines during the work months. But, during winter months, each machine is totally overhauled in a maintenance shop we have set up at the site.

Gilbert MacAdams is general superintendent, and J. P. Leonard is chief engineer. Col. Carlin H. Whitesell is district engineer for the Army, and Lt. Col. Miles L. Wachendorf is area engineer.



CRUSHING—Truck dumps blasted till into one of two Cedarapids 100-tph portable crushers that reduce material to -3-in. size. Transfer conveyor loads it into waiting trucks.



By its precise timing operation, the exclusive Cedarapids "Mixer Minder" (top panel above) controls each step of the batching cycle to shave valuable seconds off cycle time and permit production of extra batches per hour. The automatic weigh controls (bottom panel) are correlated with the timing action of the "Mixer Minder" to draw pre-set weights of aggregates and bitumen into the pugmill mixer. The precision of Cedarapids automatic controls permits meeting specifications, cycle after cycle, without variation.

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Bituminous Mixing Plant
Benefits that
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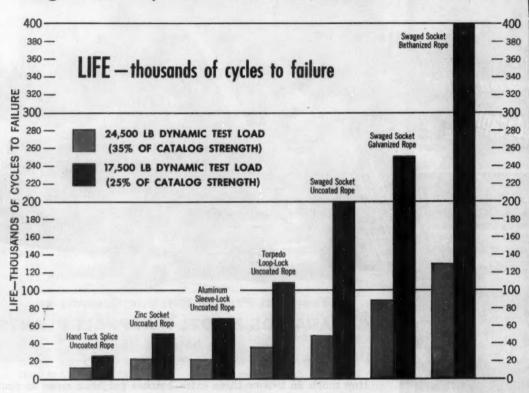
How much do two or three extra batches per hour mean to your profit picture . . . especially when you get this additional output consistently, and with no additional maintenance or operating costs over slower, smaller-capacity plants? You're right! Cedarapids all-automatic bituminous mixing plants do cut your cost per ton to put extra profit in your pocket! It will pay you to get the full story about Cedarapids automatic operation that has been job-proved for 14 years. Ask your Cedarapids Dealer about the many other Cedarapids quality-benefits you get with both the portable stack-up H-Series and the 100% portable G-Series models.

IOWA MANUFACTURING CO. Cedar Rapids, Iowa, U.S.A.

- Fast-acting, air-operated bin gates, designed with large, unobstructed openings, prevent bridging, binding or sticking. More aggregate is discharged into the batcher in less time.
- Aggregate batcher discharge gates run the full length of the pugmill mixer. When gates open, aggregate is evenly distributed for immediate fast mixing.
- Efficient "run-around" paddle arrangement in the twin-shaft pugmill speeds the mixing action.
- Faster and more thorough coating of aggregate is assured. The bitumen distributor pan, with twin rows of graduated discharge openings, sprays bitumen over the full length of the mixer.
- Unique plant breather system eliminates leakage of dust from batcher and mixer to prevent escape of valuable fines. Assures ideal working conditions for plant operator.

# TWO-YEAR STUDY REVEALS FACTS ON BOOM PENDANTS

Swaged socket proves best in exhaustive torture-tests



More than two years ago, Bethlehem began a research program to determine: (1) the type of end-fitting that would best prolong the life of pendants, and (2) the kind of wire rope that would stand up longest in this service.

Field research was carried on simultaneously with gruelling laboratory tests simulating field conditions. This research was wholly objective. Our purpose was to find answers...not to confirm preconceived notions.

The dynamic tests convinced us that the swaged socket is best by a wide margin. These tests were cruel, impartial. They showed that in dynamic holding-power, the swaged socket is unsurpassed. They also revealed a less obvious fact: that the swaged socket distributes the stresses occurring in the rope near the terminal fittings, instead of creating points of stress concentration. Result: longer pendant life.

The rope designated "Bethanized" in the above

graphs was constructed of redrawn bethanized wire. The uniform, ductile zinc coating, applied electrolytically, acts as a cushion and lubricant between the wires in boom pendant service. Moreover, bethanized rope has the added advantage of high corrosion-resistance.

As shown by the graphs, bethanized rope with swaged sockets far outperformed hot-dip galvanized and bright ropes with various types of end-fittings. For further information, write or call us at Bethlehem, Pa. Our engineers will gladly give you details.

When replacing your present pendants or buying new equipment with pendants, specify bethanized rope and swaged sockets.

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In deals where it's far easier to lose your shirt than make a bundle, TORQMATIC DRIVE economies are a big help in close bidding.

You can count, for example, on handling the job with fewer pieces of equipment — and on using the type of king-sized equipment that TORQMATIC DRIVES make possible.

You can depend on far lower repair costs. For even new drivers can handle this equipment like experts without the usual stress and strain.

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So it's easy to see why TORQMATIC users are low bidders on so many of the biggest, most profitable jobs. They

simply have the kind of equipment that can do the work most efficiently and at the lowest cost.

They've discovered that TORQMATIC DRIVE's are available in nearly every kind—and over 100 makes—of construction equipment. Check into it for yourself with your equipment dealer—or by writing:

Allison Division of General Motors, Indianapolis 6, Indiana In Canada: GENERAL MOTORS DIESEL, LTD., London, Ontario

TOROMATIC' DRIVES
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March 1959 - CONSTRUCTION METHODS and Equipment - Page 183



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SCHONROCK CABLE DUMPS Now, at assembly-line prices, you can get dump trailers customdesigned for your specific job. They will bridge legal in any state, give you maximum payload, and deliver the goods at a predetermined cost-per-yard, -per-yard-mile or -per-ton-mile.

How? Just give the man from Hobbs your job specifications. Give him factual cost information. He'll make a weight distribution and cost analysis that will pin down the Hobbs Schonrock Cable Dump best suited to do your work and earn a maximum profit. You'll know in advance where you stand!

On the job, your Hobbs Schonrock treats you, your trucks and your drivers right. It's built rugged, allows flex in the center beam to handle top shock loads. Follows your truck naturally. Dumps rapidly with a minimum strain on the truck, trailer and cable, thanks to its exclusive booster fifth wheel. Dumps from any angle on any terrain. Maintenance and repair are a fraction of the cost involved with other type dump trailers. It's no wonder Hobbs Schonrock Cable Dumps are the backbone of so many successful road-building and construction hauling operations today.

Let the man from Hobbs analyze *your* hauling operation. It will pay you well to write today for details.



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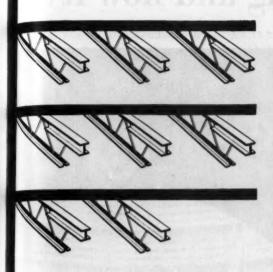
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# SJI adds 8 more types to RECOMMENDED SERIES "S" JOISTS

Types of Series "S" open web steel joists recommended by the Steel Joist Institute have been increased from 17 to 25. This wider range of selection provides several important added advantages, such as greater flexibility and a more exact application of open web steel joists for given structural loads.

The SJI members are now offering all types of "S" Series joists based upon 20,000 psi

working stress, and the SJI has published new combined specifications and load tables as a handy reference for the designing architect and engineer.

These new developments by the Steel Joist Institute give added assurance that you can specify with confidence when using steel joists produced in accordance with the standards and specifications of the Steel Joist Institute.

Send coupon for free copy of combined specifications and load tables.

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Please send me a copy of your new Standard Specifications and Load Tables.

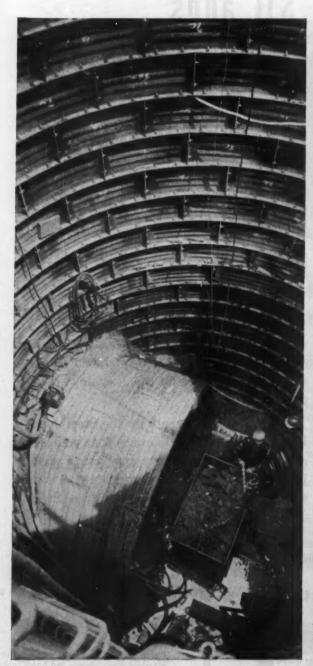
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# Faster, safer tunneling and how it's



COMPLETED IN 3 WORKING DAYS—352 COMMERCIAL tunnel liner plates reinforce 192" diameter, 30 feet deep, initial access shaft for Tousley Construction Co. section of the sewer project. As vertical shaft bored downward, the 16" x 371% "tunnel liner plates were successively secured in position with 34" bolts.



for

UNCLUTTERED WORKING AREA at Thompson Construction Co. access shaft permits easy entry into tunnels and allows fast removal of % cubic yard mucking bucket loaded with chunks of hard-packed blue clay from tunnel heading. Bucket is lifted and dumped at surface by crane equipped with 35 ft. boom.

# being done

Steel liner plates produced by COMMERCIAL for speedier assembly and greater safety factor prove unanimous choice of two different contractors on \$1,710,000 Indianapolis storm interceptor sewer project.

Contracts for the nearly two miles of tunneling involved in the East Michigan Street storm sewer job at Indianapolis, Indiana were awarded to two separate firms. And here's what they had to say about their independent choice of COMMERCIAL steel tunnel liner supports:

"No other liner plate can compare with COMMERCIAL for easier and faster installation and assembly," says Mr. Porter Williams, Secretary of the Thompson Construction Company. "And among all steel tunnel liner designs, we are firmly convinced there is none safer than COMMERCIAL'S," he added.

"We have been using COMMERCIAL tunnel liner plates exclusively for three years," commented Mr. Don Bixler, President of the Tousley Construction Company. "Their consistent size and uniformity simplifies placement and speeds fastening," he continued.

The Thompson Construction Company is handling 5400 feet of the tunnel project—two sections of 48" and 84" in diameter. Both sections are being tunneled simultaneously but in opposite directions through hard-packed blue clay soil. The 84" diameter tube will house a 60" I. D. pre-cast concrete pipe, while the 48" section will enclose a similar 18" pipe. Space between pipe and liner shell will eventually be filled with concrete. In addition, twelve 21 ft. deep vertical shafts, each fitted with manholes for future access, will be dug at strategic points along the complete length of the tunnel.

The Tousley Construction Company, on another contract, is constructing 4500 feet of tunnel, 900 feet of which will be 10 ft. in diameter and the balance of 3600 feet 11 ft. in diameter. Pre-cast concrete pipe 96° and 102° in diameter will eventually line the entire tunnel. Progress on the job, which will also include six 30 ft. deep vertical shafts for future access, is moving along at the rate of 12 feet per day in spite of the hard-packed blue clay and water seepage complications involved.

For more complete details on how COMMERCIAL steel liner plate can simplify and speed up your vertical shaft, surface or sub-surface tunnel project—help make it safer—send today for your copy of Bulletin 300-Cl. With over 25 years experience in the design of supports for soft ground or rock excavation, COMMERCIAL's engineers may be able to suggest a more workable and economical solution to your particular support design problem whatever it may be. Address: Commercial Shearing & Stamping Company, Dept. B-10, Youngstown 1, Ohio.



10 FEET PER DAY is average rate of progress in each of the concurrent Thompson tunnels. As fast as mucking operation progresses, 36'' thick COMMERCIAL liner plates are rapidly installed by the head miners. The size and uniform shape of the plates facilitate their storage alongside mucking car tracks.



NO OUTSIDE BOLTING—Deep flange which surrounds all four sides of COMMERCIAL plate eliminates this hazard. All head miner does is to position plate, line up accurate pre-punched bolt holes, insert ¾" quick acting bolts and tighten nuts with a pin wrench. No fear of loose fit because inside through-flange connections eliminate need of outside support for bolt heads.



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# OFF TO A FLYING START in his own business!

When his paycheck income was caught in a squeeze, Al Beuche went into business for himself. He bought an Allis-Chalmers D-17 tractor with loader and backhoe. It paid off big... now he has a profitable excavating business.

Al is kept busy at Flushing, Michigan, digging sewer lines, putting in septic tanks, doing landscaping and general excavating. And, with the population surge to suburban areas, he isn't worried about the future.

These are new design tractors. Take the low-profile,

high-clearance feature, for example. Weight is kept low, spread over a longer wheel base where it works for you. Still there's plenty of clearance, and the rig turns tighter than others—turns in a radius of 8 ft., 1 in.

You're in for a pleasant surprise when you put one of these new Allis-Chalmers utility tractors through its paces on your own job! Your dealer will arrange it, or you can write direct to Allis-Chalmers. Use the coupon below, and remember—it doesn't cost to find out!

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D-14 43-hp, 4,200-lb weight D-17 63-hp, 5,300-lb weight

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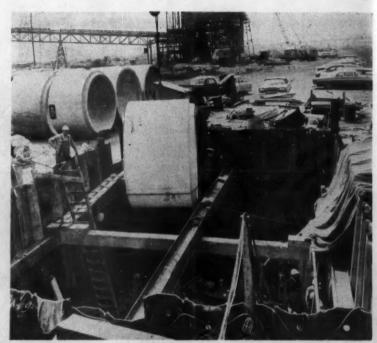
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March 1959 - CONSTRUCTION METHODS and Equipment - Page 189

Placing sections of 108-in. dia reinforced concrete pipe in two tunnels that cross under a 13-track railroad right-of-way is cheaper than forming a concrete liner in place. An air tugger pulls the pipe sections into the tunnel on rails running along bottom of steel liner plates.



INTO SHAFT—Lima crane lowers section of pipe onto rails that run along bottom of tunnel liner plates. Contractor sank sheet pile shafts at ends of tunnel to provide access.

# Air Tugger Pulls Pipe

REINFORCED CONCRETE PIPE forms a precast lining for two tunnels driven under a 13-track railroad right-of-way in New Jersey.

The contractor devised a slick method of placing the 9-ft dia pipe sections in the tunnel. An air tugger at one end pulled the pipe into place on rails at the bottom of the steel liner plates.

The pipe is, in effect, a precast liner for the tunnel. It was cheaper than forming a concrete liner in place. Voids between the pipe and liner were filled with peagravel concrete grout. The pipe alone is strong enough to withstand loads from earth pressure and the railroad without help from the steel liner or grouted concrete fill.

The tunnel is merely a hole in which to place the pipe. Jacking the sections under the railroad was not feasible because of the heavy flow of underground water in the area.

The tunnels carry cooling water

from two 290,000-kw steam turbine generators in the nearly completed Bergen Generating Plant of the Public Service Electric and Gas Co. of New Jersey. The tunnels cross beneath the tracks of the New York Central and the New York, Susquehanna & Western railroads and discharge into an open canal running to the nearby Hackensack River.

Thomas Adair Construction Co. of Flushing, N. Y., held the subcontract for driving the tunnels and placing the pipe. They drove each tunnel from a shaft at one end with a shield manufactured for them by Robert S. Mayo Co., York, Pa. J. Rich Steers, Inc. of New York placed the sheet pile cofferdams at each end of the two tunnels, but subbed the rest of the job to Adair. Steers constructed foundations, coal-handling facilities, and a dock for the plant.

Twelve 50-ton Rodgers hydraulic jacks shoved the shield ahead 16 in. at a time. They bucked against steel ribs set at 16-in. intervals that reinforce the ¼-in.-thick liner plate, all supplied by Bethlehm Steel Co. An air - operated hydraulic pump mounted on a sliding platform behind the shield powered the jacks.

Because of the heavy flow of ground water and the thin cover (varying from 18 in. to 5 ft), Adair consolidated the soft ground ahead of the shield with injections of American Cyanamid gel. They started the injections at the top of the shield and worked down as far as necessary.

The mucking crew loaded by hand three 1-yd box-type cars that ran on 2-ft-gage rails along the invert of the tunnel. Adair averaged 12 ft of tunnel per 24-hr day and completed the total 543 ft of tunnel in about 50 working days.

# Placing the Pipe

The 9-in.-thick pipe is reinforced with two layers of welded



ON RAILS—Tugging cable attaches to steel channel at bottom of pipe section. It grips projecting lip at trailing edge of pipe. Tranch jack inside clamps bridle and holds pipe.

# into Tunnel

wire fabric. The circumferential wires in each cage are 0.505 in. dia, spaced at 2-in. intervals. Wires in the other direction are No. 4 gage at 8 in. Concrete Products Division of American-Marietta Co. manufactured the 6-ft-long pipe sections at their Kenvil, N. J., plant.

Adair lowered the sections onto the rails at the bottom of the shaft at the east end of the tunnel. They set an Ingersoll-Rand air tugger at each end of the tunnel—one at the west end to pull the pipe through the tunnel and a smaller one at the east end to retrieve the bridle attaching the cable to the pipe when the section reached final position. A Worthington 600-cfm compressor supplied air to the tuggers.

A five-part tugging cable pulled the pipe. A small sled sliding just in front of the pipe held the cable above the ribs.

The bridle consisted of a channel laid along the bottom of the pipe section and hooked over the lip at the bottom of the trailing edge. To prevent the tugging cable from pulling up on the section and possibly damaging the projecting lip, a trench screw jack between the top of the concrete



AT THE START—Air tugger behind pipe section in starting shaft pays out cable.

pipe and the bridle held the section in a horizontal position.

The tugger pulled the pipe through the tunnel until it fitted against the preceding section. The lips of adjoining sections fitted together snugly to form a tight ship-lap joint. When all sections had been slid into place, the joints were sealed with cement.

The pipe was a tight fit. There was only about ¼-in. clearance at the top between the pipe and the tunnel liner. On the sides the gap was about 3 to 4 in. because earth pressure bulged the circular liner plates into an egg-shape.

But Adair squeezed the pipe sections through the tunnel without trouble. They placed a 6-ft section every hour.

To complete the job, Adair filled the space between pipe and liner plates with pea gravel, well-graded up to %-in. in size, by blowing it through the lifting holes in each pipe section. Then grout was pumped in.

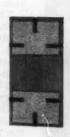
Because ground water flowed from west to east, grouting was started at the west end so that water would be driven ahead of the grout and out of the tunnel. Sandbags placed between pipe and liner at the ends kept the pea gravel in place during grouting. After grouting was completed, the ends of each tunnel were faced with 9 in. of concrete.

Superintendent for general contractor United Engineers & Contractors, Inc., of Philadelphia, Pa., was George Dorn, J. Rich Steers, Inc. had superintendent Michael Derelenko on the job. Thomas Adair handled supervision of his crew.



PULLING POWER An Ingersoll-Rand air tugger at the other end is motive power.





# SUPERIOR PANEL FORMS

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Only ONE Working Part, the Combination Clamp Aligns and Locks Form, Receives Tie Rod. Holds Liner, and Provides Shelf.

SUPERIOR All-Ply Panels are used in all types of construction-for forming ordinary residential foundations to intricate high walls.

The great strength and rigidity of All-Ply Panel Forms are provided by exterior grade 11/4" plywood, backed at strategic areas with 1/2" plywood. There are no cumbersome metal or wooden frames. Forms weigh less than 5 lbs. per sq. ft. and are easily handled by one man. A special sealer on all surfaces and edges assures long life. Standard sizes are 2 x 4, 2 x 6, and 2 x 8 ft.

The basis of All-Ply superiority and speed is ONE working part (the unique Combination Clamp) which does four separate jobs. A hammer is the only tool required for erection and stripping. The absence of frames permit easy stacking and transporting in minimum space. Long life and many re-uses are assured.





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- / SIMPLICITY any crew with minimum experience will be able to make fast progress.
- / ONE WORKING PART does 4 separate jobs.
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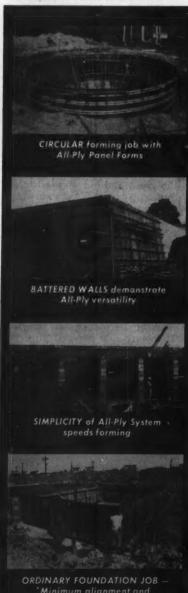
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# Rhodes & Jamieson keeps construction materials on the go

Rhodes & Jamieson, Oakland, California, produces about 5,600 cubic yards of wet mix construction material every day. To keep this "perishable" material moving on schedule, the company runs each bottom dump truck in its large fleet on two 9-hour shifts, and gives each a preventive maintenance check every week.

Tough schedules and tougher hauling conditions call for the best in equipment. That's why Rhodes & Jamieson officials are so pleased with the performance and reliability of the Fuller Transmissions in their big fleet. Typical of the equipment used by the company are the following trucks:

80 International RF-192 ready-mix trucks with 5 and 7-yard mixers, equipped with Fuller 5-C-65, 5-speed Transmissions.

22 International D-405 double bottom hopper dump trucks, with Fuller R-96 10-speed ROADRANGER® single-stick Transmissions.

3 International RD-450 6x6 C.O.E.

units with 7-yard mixers, equipped with Fuller R-46 semi-automatic ROADRANGER Transmissions, featuring 8 closely-spaced forward speeds, shifted by a single lever.

For dependability, ease of operation and economy, Rhodes & Jamieson specifies Fuller Transmissions. There is a Fuller for your job. Ask your truck or equipment dealer for more information on the Fuller Transmission best suited to meet your specific operating requirements.

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Automativa Products Company, Ltd., Brack House, Langham Street, London W.1, England, European Representative

# OVERLAID PLYWOOD COST PER USE"

FINAL LINK: NIMITZ FREEWAY Market to Fallon Streets Oakland, California

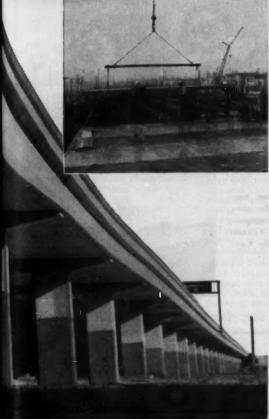
DESIGN & ENGINEERING: Bridge Department, Division of Highways, California Department of Public Works

CONTRACTOR:
Johnson, Drake & Piper, Inc.
Oakland, California

# FORMS GIVE LOWEST ON ELEVATED HIGHWAY



In carefully planned sequence of operations, prefabricated shoring towers were positioned, screw-jacked to required height. Deck form section were then crane lifted into position.



High density overlaid plywood concrete form panels give over 50 re-uses, cost less than .007¢ per sq. ft. of form per pour.

"THE EXTRA RE-USES we got from overlaid plywood more than offset its greater initial cost," says George Krenkel, project manager for Johnson, Drake & Piper, Inc., contractors for this 1.55-mile long 8-lane elevated highway.

"Even after giving upwards of 50 re-uses, a large percentage of the panels were salvaged for additional use on other jobs," Mr. Krenkel reports. "Besides being more economical in terms of cost per use, overlaid plywood creates much smoother concrete and is easier to strip and clean."

On the job over 50,000 sq. ft. of 5%" overlaid plywood was used for deck slabs, columns and guard rails. Prebuilt 8' x 20' and 8' x 22' deck forms were supported by ingenious prefabricated shoring towers which were leap-frogged as pouring progressed. Screw jacks were used to raise towers to required heights. Stripping was accomplished simply by lowering jacks until the forms came free.



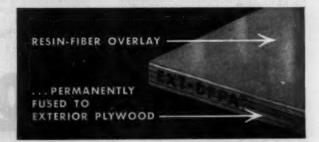
# **DOUGLAS FIR PLYWOOD ASSOCIATION**

TACOMA 2, WASHINGTO

-a non-profit industry organization devoted to research, promotion and quality control

HIGH DENSITY OVERLAID FIR PLYWOOD is a premium concrete form panel intended for jobs that require ultra-smooth concrete surfaces and/or many re-uses (up to 200 re-uses may be obtained with properly designed and constructed forms). Base panel is EXT-DFPA® Exterior plywood.

Standard plywood concrete form grades are: Interior PlyForm® made with water-resistant glue for multiple (10-12) re-uses; Exterior Plyform® (waterproof glue) for 25 or more re-uses.



# Asphalt overlay for busy truck route



US Route 75 in Texas received hot-mix Texaco Asphaltic Concrete overlay, constructed by the Gulf Bitulithic Company.

Another section of US 75, which was given a Texaeo Asphaltic Concrete overlay by the Public Construction Company.

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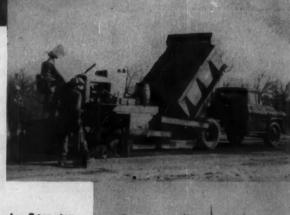
anti-fi

US 75 is one of the principal trucking routes of Texas. It connects the State's two largest cities, Houston and Dallas.

Last year, two Texas contractors teamed up to construct an overlay of heavy-duty hot-mix Texaco Asphaltic Concrete pavement by a "pave and skip" method on a 30-mile section of this important route. Portions of the existing pavement in satisfactory condition were not overlaid.

Road builders have found the answers to their paving and maintenance problems in Texaco Asphalt products for 55 years. These asphalt cements, cutback asphalts, slow-curing asphaltic oils and emulsified asphalts are produced from scientifically selected crudes. They are refined not merely to meet specifications, but to deliver lasting service with a minimum of maintenance.

Helpful information for the road builder on all types of Asphalt construction is supplied in two free Texaco brochures. Write our nearest office for copies. No obligation.



An 8-ton tandem roller gives final compaction to Texaco Asphaltic Concrete.

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The rugged new Lima Type 64 fills a definite need for a heavy duty 1½-yd. shovel, 40-ton crane, dragline and 1½-yd. pullshovel that will combine dependable high performance with low maintenance costs, for maximum profit! The new type 64-SC with extra long, wide crawlers is designed for special crane service. This new Lima has a capacity of 50 tons on a 40' boom at 10' radius.

# Lima Quality Features

You get these, and many more, Lima quality features in the 64 and 64-SC; precision-machined teeth on heat-treated alloy steel gears; long-lasting, trouble-free anti-friction roller bearings; safe, sure band brake and jaw clutch power steer-

ing; splined shafting; extra-large-diameter hoist, crowd swing and propel clutches; independent planetary boom hoist.

Crawler truck base is strong one-piece alloy steel casting with integral machined ring gear and flame-hardened roller path. Rotating base is one-piece carbon steel casting, built to absorb severest shocks of hard digging. Center pin is relieved of strain by six hook-type conical rollers tapered to revolve naturally around double-flanged roller path.

Like all Limas, the 64 and 64-SC are good travelers. Strips down easily for haulage. Side frame assemblies, complete with treads, are simple to remove. Ledge mounted, one-piece rear counterweight can be easily removed. When equipped

for crane service, folding or telescoping gantries can be lowered to cab height for low clearance.

### Designed to Outperform

Service is easy, every part readily accessible. Simplicity of power transmission design lessens friction, reduces upkeep, and delivers more power. Torque converter prevents engine stall, cushions shocks to operator and machine, increases performance by building up line pull.

Learn more about the Type 64 and 64-SC, newest members of the Lima family of high-performance construction equipment —The Lima line includes shovels to 6 cu. yd., cranes to 110 tons, draglines variable. Write or see your Lima distributor now.

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# Construction Men in the News . . .

# Roadbuilder Flies to Work

In just a day, Ohio roadbuilder Vern Holderman can personally check out half a dozen of his road jobs scattered throughout state. Key to his maneuverability—two private planes.



TAKE-OFF-Holderman and his pilot Harlen Ford chuckle over the total mileage they plan to cover on state-wide job visits.

VERN HOLDERMAN, president of V. N. Holderman & Sons of Columbus, Ohio, is a flying roadbuilder, one of those contractors who are taking to the air to make their operations more efficient.

"My two airplanes," says Holderman, "mean three extra days a week to me. And don't let anybody tell you those three extra days aren't money in the bank."

Holderman handles more than \$20 million of construction a year throughout Ohio and in the nearby areas of Pennsylvania and West Virginia. He's a man who likes to give his personal attention to each one of his jobs. And he enjoys a nation-wide reputation as a whizz with machinery. (He started his construction career as an equipment operator.)

He credits his two airplanes with making it possible for him to keep in close personal touch with each job. They are a Cessna 180 that cost him about \$40,000 and a twin-engine Aero-Commander that cost about \$98,000.

Holderman won't say exactly how much it costs to operate and maintain the two planes, but he says he's convinced that they earn their keep—and more.

### A Typical Day

A typical Holderman work day reveals how closely the aircraft fit into his operations. Holderman arrives at his office on the outskirts of Columbus about 8:30 am. He starts the day's work by looking over his mail. He then gets on the Motorola two-way radio set in his office and contacts each of his widely scattered jobs.

"Having some trouble, Vern," say a voice that belongs to a job superintendent working near Mansfield. "New telescoping spreader. Damned hydraulic lines are too complicated for me."

"Okay," says Holderman. "Pll get down to take a look at it sometime this morning. We can fly in parts if you need them later."

From Lima comes a call that a length of subbase is ready for concrete paving.

"But, Vern," says the superintendent's voice. "The base is dusty as hell. Do you want us to put down a water blanket or wait for rain?"

"Well," says the voice, "there's man. "What are you talking about?"

"Well," says the voice, "there's a dirty black cloud almost overhead, and chances are we'll get a free soaking in an hour or two."

"Don't wait more than an hour," says Holderman. "If it doesn't rain then, soak her. Anyway, I'll fly over and track her for you."

From Marion, Holderman hears that a new 24-ft adjustable subbase spreader he had worked up out of a Blaw-Knox spreader and a Caterpillar D9 is ready for a trial.

"Go ahead and set her working," Holderman tells his superintendent. "I'll be out today to see if she lives up to expectations."

"Awright," says the voice.

Holderman checks with the other jobs. They're going well enough so he phones Harlen Ford, his full-time pilot, at the Ohio State University airport outside of Columbus and tells him to ready the plane.

### **Calls Secretary**

Holderman next calls in his secretary, dictates several letters, then hops into his big white Cadillac and starts off toward the airport. In a few minutes a call comes in from his secretary over the two-way Motorola radio in the car.

"Mr. Holderman," says a tiny feminine voice. "There's a salesman here from Koehring who says he has a new heavy duty frontend loader out in Marion that he'd like to show you."

"Okay," says Holderman. "I'm going out that way anyway. Tell him to meet me out at the airport, and I'll take him along." "My two airplanes mean three extra days a week to me, and that's money in the bank.



FIRST STOP—Holderman and men discuss best way to tackle repair of fouled hydraulic line on a telescoping spreader.



LAST STOP—Holderman and a superintendent talk over merits of Koehring heavy-duty Skooper as it goes through its paces.

"Yes, Mr. Holderman."

Holderman's car reaches the airport at the same time as the salesman's. Pilot Ford has the twin-engined Aero Commander warming up.

"Morning, Mr. Holderman," says Ford.

"Hi, Harlen," says Holderman.
"We all set to go?"

"Set as we'll ever be."

"Then, let's go," says Holderman, climbing into the plane and sinking into the co-pilot's seat.

Ford hooks his safety belt, looks around to see that his boss and the salesman are safely secured, then pushes the two throttle levers forward, gunning the engine. The plane shudders, then inches forward slowly. Suddenly, with a roar, the plane races ahead. Within moments the airport lies several hundred feet below, and the sturdy plane is flying at a 225 mph clip through a crisp blue sky.

Holderman turns to look at the salesman who clutches rather fearfully at the safety strap near the rear window.

"Don't let it throw you," Holderman says, smiling. "Scared the hell out of me at first. But you get to know your plane and pilot. I'll trust my life to both."

"Good enough," says the salesman, settling back more relaxed. En route to Mansfield, Holderman picks up the receiver of the two-way radio at his side, calls the job superintendent, advises him that they are about to land, and instructs him to meet the plane at a tiny rural airport on the outskirts of the city.

### First Landing

The plane touches down on a grassy landing strip. It then taxis up toward two small hangars surrounded by air-minded teenagers of the town, anxious to get a close-up glimpse of the twinengined craft.

A Holderman superintendent waits with his car just off the landing strip. Smiling at the kids standing about, Holderman hops out of the plane and takes a pair of cowboy boots from under the rear seat. Off go his own shoes—on go the cowboy boots.

"Got better use for them on a road job than any cowboy ever had for 'em on a horse," he explains.

Holderman's jacket comes off next. This he throws onto the back seat of the plane. Finally, together with the salesman, he gets into the waiting car and moves off toward the job strip.

At the job, Holderman saunters up to a group of mechanics working on a hydraulic feed line of the 24-ft spreader.

"How's it going, boys?" Holder-

man asks.

"Wouldn't want to say," one mechanic replies with a shrug.

"Well, let's take a look," says Holderman, rolling up his sleeves.

He tinkers with the lines for a few moments then, twenty minutes later, Holderman, the salesman, and the pilot are again in the air. The second stop—twenty minutes later—is at Marion. There, another Holderman superintendent picks up the party and drives them five miles to a spread where Holderman's ingenious two-lane subbase spreader is at work.

This is an adjustable machine Holderman made up from a modified Blaw-Knox spreader and a Caterpillar D9 mounting a V-blade. As the men watch, a dump truck backs up to the machine and drops a load. The rig quickly spreads it in a swath 24 ft wide and 6 in, deep.

"She's a beauty," says the salesman.

"Works like a charm," says Holderman, obviously pleased with his imaginative handiwork.

### A Day Ends

A light rain begins to fall. The salesman, who has his new frontend loader working nearby, fidgets impatiently. Holderman notices and smiles.

continued on next page

"Okay," he says, "let's go see your super-machine."

Holderman instructs his superintendent to drive them to where the new machine is working. The rig turns out to be one of the Koehring heavy-duty 205 crawler cranes fitted with 3-yd front-end loader buckets that are operated from hydraulic arms. The spanking new machine chews into a spoil pile with clock-like regularity. Still in shirt sleeves, despite the light rain, Holderman watches the machine work with an alert attentiveness.

"What do you think, Vern?" asks the salesman.

"Wouldn't want to say, just yet," Holderman replies, then asks the salesman to have the machine operator move the rig around, try a different load position, turn the cab full cycle at full speed. This continues for half an hour while Holderman studies the machine from every angle.

After a while, Holderman calls his pilot over and instructs him to take motion pictures of the machine at work. Harlen gets a camera from the car and, as the rig goes through its paces, makes a film record.

"My boys and I will look the film over," Holderman says. "We'll let you know."

"Good enough," says the salesman, and the men get back into the car and head toward the airport. They stop once more on a cliffside to enable the contractor to check a dragline pulling fill from a stream bed.

Again in the air, the plane heads towards Lima. Holderman spots a big black rain cloud over the job. He picks up the radio receiver.

"We're right alongside that cloud you were talking about," Holderman tells his superintendent. "She saving us any money yet?"

"Just starting to fall," says the superintendent. "If it keeps up for an hour, and falls hard enough, we'll be all right."

"Okay," says Holderman. "I won't bother to land, then. We'll let it go that way."

"Check," says the voice. "And

by the way, Vern, gonna need two more scrapers tomorrow for the far south spread."

"For how long?" "Just for a day."

"Won't be worth sending them up from Columbus. Better rent." "Good idea-but where?"

"Don't know many dealers around here. Just have to check." "Well, okay-"

Just then the radio crackles, and a third voice joins the conversation.

"Just happen to be listening in," says the third voice. It turns out to be a machinery dealer who also rents equipment. "I've got two Cat DW20's in the shop. Can send them right over."

"Well, send them," Holderman says, laughing.

"To the far end of the job, the south," says the superintendent's voice. "That's where we'll need them."

"Yeah, I know-I heard," says the dealer.

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Still laughing, Holderman returns the receiver to the hook.

"Hardly pays to use the tele-



# Stang dewatering cuts time by 50% and reduces costs!

Maximum coordination between wellpoint dewatering, excavation, concrete and rip-rap moved this beach front flood control project ahead by six months. As a result, more than substantial unit cost savings were realized.

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Built-in brawn means tractor strength and stamina to handle big buckets on heavy-duty International Pippin or International Wagner backhoes—sizes for trenching to grade 10, 12½, or 13¼ feet deep.



New Fast Reverser Unit speeds up shuttle-type operations. In each of five gears, the reverse speed is 22 per cent faster than the forward speed in that gear.

# The CLEVELAND 240 TRENCHER

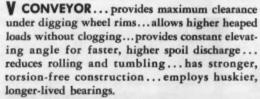
# 12' x 2½' CONVEYOR

- Power-Shifted
- Power-Folded

controlled from operator's seat

WORLD'S FINEST TRENCHER CRAWLER

# DIGS FULL 3' WIDE by 6'3" DEEP



POWER-SHIFT... operator controls hydraulic shifting and positioning of conveyor... digs past poles, trees, fences... places spoil where needed...all without leaving seat, without interrupting other operations.

POWER-FOLD... brings conveyor's 12-foot length down to within trencher's overall 8-foot



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For 20" dia. pipe 240 here digs trench to average 4' deep, 34" wide at bottom, sloped to approx. 5' wide at top.

width...permits transport without special highway permits...same automatic system unfolds conveyor to digging position.

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Power-folded



Power-shifted, left



Centered V Conveyor



Power-shifted, right



The CLEVELAND TRENCHER CO.

20100 St. Clair Avenue

Cleveland 17, Ohio

phone any more," he says, "Takes too much time."

The salesman, also laughing, nods agreement. The plane now is an hour away from Columbus. During the return run. Holderman and the salesman chat about the equipment market. While they chat the salesman tries to sneak in a pitch for his front-end loader. Holderman catches the pitch and parries with, "Heavy machines cost more than apples. We're gonna look at the film and think real hard about whether it will help our operation. We decide it does-you've got a sale."

The plane touches down at the Columbus airport. The rain has reached the field and is falling hard. Right after touchdown a call comes in from Holderman's son, Bob, who is in Newark.

"Bob wants me to pick him up in Newark," the pilot says.

"How about the rain?" Holderman asks.

"It's a clean rain and low," says the pilot. "I'll fly over it."

"Okay, Harlen," Holderman says, patting his pilot on the back.

The sleek white craft roars up into the air. Holderman looks at the plane a moment, then turns to the salesman.

"Plane's worth its weight in gold," he says. "Would have taken me three days to cover the ground I did today. Now I can sleep well-the house is in order for the day."

Finally, shaking the salesman's hand. Holderman gets into his car and drives off into the rain. The tires of the Cadillac streak long parallel herringbone patterns on the asphalt road. Overhead, the twin-engined plane cuts into the overcast and disappears.

# **Mellon-Stuart**

ROBERT N. PETERS is the new vice president and member of the board of directors of the Mellon-Stuart Co., Pittsburgh.

Peters, formerly general superintendent, has been with the firm for the past eight years. Before joining M-S he served in management positions with Hunzinger Construction Co. of Milwaukee.

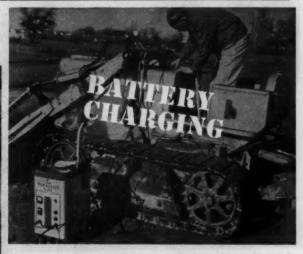
# National Constructors



W. R. WOOD is the new president of the National Constructors Association, an organization of firms engaged in the design and construction of large industrial plants. Wood, who is president of Girdler Construction Division, Chemetron Corp., Louisville, Ky., will serve through 1959. Donald W. Darnell, chairman, The Fluor

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No other tractor-shovel comes close to matching the wide selection of interchangeable attachments available for a 4-wheel-drive PAYLOADER—real working tools that save time onthe-job and the bigb cost of special one-purpose machines.

A dependable PAYLOADER can be the key machine in new construction, repair or maintenance work. Big rubber tires permit it to walk and work over sidewalks and curbs without damage. It travels under its own power, gets to where it is needed fast, without having to rely on a trailer or truck for transport, and handles many scattered jobs in a single day to multiply its versatility even more. See your nearby Hough Distributor for more complete details.

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Corp., Ltd., Los Angeles, is the new vice president.

New members of the excutive committee are: R. L. Cashen, vice president, the H. K. Ferguson Co., Cleveland; W. Earl Dunn, vice president, Blaw-Knox Co., Pittsburgh; J. W. Smith, assistant vice president, The M. W. Kellogg Co., N. Y., and Mr. Darnell.

# Merritt-Chapman & Scott



ROBERT E. HARVEY replaces Louis E. Wolfson as president of Merritt-Chapman & Scott Corp. He formerly was the firm's senior executive vice president. Wolfson continues as chairman of the board and as chief executive of the company.

Harvey joined the firm in 1954 and became executive vice president and a director in 1955. Before joining the company he spent ten years in shipbuilding and other industrial fields.

# Bishop-Mattei

J. PAUL OPPENHEIM, vice president and general manager of Bishop-Mattei Construction Co., San Francisco, adds the vice presidency of C-B Building Corp. of Los Angeles to his duties. Both C-B and Bishop-Mattei are affiliated with the Bishop group of engineering and construction companies.

Oppenheim has been in architecture, engineering, and construction for 20 years. He joined the Bishop organization as manager in November, 1955, and became vice president and general manager of Bishop-Mattei in 1956.

Aeroquip Hose Lines Speed Field Maintenance, Cut Replacement Costs

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Join the many equipment operators who standardize on Aeroquip Hose Lines with Reusable Fittings for all fluid lines. With Aeroquip, you make quick replacements in the fleld or in the shop. Just cut the length of hose you need and attach the fittings with hand tools. A small inventory of bulk hose and some spare fittings meet all hose line requirements. Get all the money-saving and time-savings facts from the Aeroquip Distributor listed in your Yellow Page Phone Book, or write us.

AEROQUIP 1508

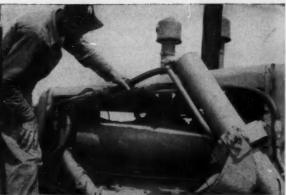
For very high pressure hydraulic lines or extremely severe applications, use Aeroquip 1508 Hose with multiple spiral wrap wire reinforcement.

AEROQUIP 1509

For high pressure hydraulic lines, use Aeroquip 1509 Double Wire Braid Hose and Reusable Fittings.

AEROQUIP 1503

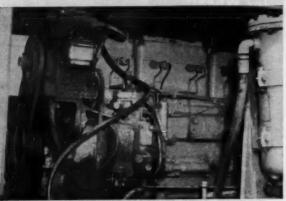
For engine lube oil, air and water lines, use 1503 Single Wire Braid Hose and Reusable Fittings.



Aeroquip 1509 High Pressure Hydraulic Lines on this dozer are extra tough, extra durable. They withstand heat, cold, vibration, abrasion, constant flexing.



This replacement Aeroquip Hose Line is being installed on a Caterpillar D9 Tractor. Replacement lines of any length can be made up in the shop or field using Aeroquip Hose and Fittings.



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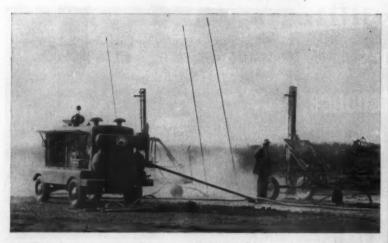
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Tough, rugged Frederick Drop Balls eliminate expensive drilling, blasting . . . deliver smashing low cost power when you want it, where you want it. Exclusive "Pear-shape" drops straight—swings true—withstands greater impact. Balls 4000 lbs. or over are made of extra durable nickel alloy—or special alloys furnished on request. "E-Z" Swing recessed steel eye gives greater cable protection plus free swinging action. Balls can be furnished with replaceable pins. Use Frederick Cable Weights (135 & 250 lbs.) and Frederick Swivels on all size balls for true, safe cable performance. Special release hooks for free dropping also available.

Vrite us today for prices and illustrated iii direct or see your nearest Equipm

FREDERICK IRON & STEEL, INC. FREDERICK Established 1890 MARYLAND

Phones MOnument 3-5111

Makers of Manhole Frames, Covers and Steps • Storm Graffags
Meter Frames and Covers • Centrifugal Pumps • Grey Iron Castings





# Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distributors, sales personnel and other activities.

# **Distributor Appointments**

The Yale & Towne Mfg. Co.: Neff Machinery, Inc., of Miami and West Palm Beach, Fla., and Lakeshore Materials Handling Co. of Grand Rapids, Mich., have been appointed exclusive franchise representatives for Yale industrial lift trucks and tractor shovels. The Moody Equipment & Supply Co. of Little Rock, Ark., and Cook Bros. Truck and Equipment Co. of Oakland, Calif., have been appointed distributors for the Trojan tractor shovel line.

Aeroquip Corp.: The following six distributors have been appointed: Westbrook Supply of Camden, Inc. of Camden, Ark.; Industrial Supply Co. of New York City; Boggs & Company, Inc. of Charlotte, N. C.; Power Brake Equipment Co. of Duluth, Minn.; Paul Automotive, Inc. of Lansing, Mich.; Elm Equipment Co. of Mobile, Ala.

Bucyrus-Erie Co.: The following three distributors have been appointed: Flack Equipment Co. of Dayton, Ohio; Seabrook Machinery, Inc. of Tallahassee, Fla.; and Field Machinery Co. of Cambridge, Mass.

Western Machinery Co.: The following six distributors have been appointed: Edward R. Bacon Co. of San Francisco, Calif.; The Plains Machinery Co. of western Texas; The Contractor's Machinery Co. of San Antonio, Tex.; A. H. Puffer & Co. of Rockford, Ill., Gibson-Stewart Co. of Cleveland; Watson Equipment Inc., of Pittsburgh, Pa.

Schramm, Inc.: J. M. Battalion Co. of Windsor, Conn. has been named distributor for Schramm portable and stationary compressors, Pneumatractor self-propelled air compressors and construction tools for the State of Connecticut.

continued on page 209



# The BUTLER Airflomatic Cement Feeder

With the BUTLER AIRFLOMATIC your cement is conveyed on a trouble-free cushion of air. No moving parts to break. Nothing to cause down-time because of feeder trouble.

And you have high precision feeding-always.

Best of all, the BUTLER AIRFLOMATIC can easily be installed in any plant regardless of make wherever a vane feeder or screw feeder has been used.

A blower attached to the batcher platform provides a cushion of large volume, low pressure air

which also aerates and fluffs the cement in the overhead bin... and does it much more effectively than a costly compressor. Often no jets for additional air are needed.

So no matter who manufactured the plant you have, call in the BUTLER Distributor\* for a complete description of the Airflomatic Feeder or send the coupon directly to BUTLER BIN. You'll get prompt action.

# BUTLER BIN COMPANY

959 Blackstone Avenue, Waukesha, Wisconsin

"One BUTLER Distributor put an Airflomatic in his pick-up truck, called at 20 Concrete Plants and Roadbuilders set-ups. All 20 bought Airflomatics. You'll want it, too.

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BUTLER	BIN	COMPANY,	Waukesha.	Wisconsin

Please send me complete description and costs of the BUTLER AIRFLOMATIC CEMENT FEEDER

- We have a Ready-Mixed Plant which was manufactured by.....
- Highway Batching Plant which was manufactured by
- Concrete Block Plant which was manufactured by

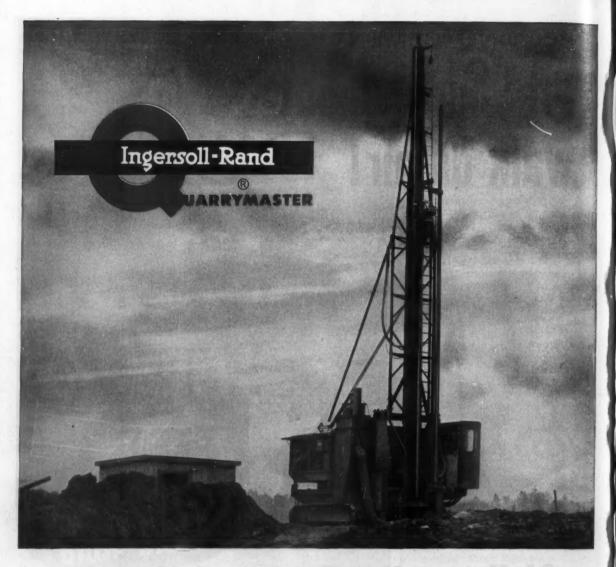
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March 1959 - CONSTRUCTION METHODS and Equipment - Page 207



# "DOWN THE HOLE DRILL" PERFORMANCE Results in Two Repeat Orders

An Ingersoil-Rand Quarrymaster in Quebec, Canada, is now at work drilling the extremely hard and abrasive quartzite cap rock formation overlying an extensive magnetite iron ore body. This machine utilizing an I-R DHD-400 "down the hole drill" and 7 inch Carset bits has averaged 15 to 20 feet of hole per hour since the unit went into operation last spring.

Test holes in the Magnetite iron ore indicate

that overall drilling speed in the ore will be twice that in the cap rock. In the ore body the face height will be 25 feet.

Based on the performance of the first unit over the past six months, two additional units are now on order. Phone or write your I-R man today requesting full particulars on the high tonnage performance of this and other Quarrymaster installations. • Ca 3 c • %-• Co in • Life and • Life





DRIFTERS . JACKDRILLS . JACKHAMERS . CRAWL-IR DRILLS . CARSET BITS . AIR TOOLS . COMPRESSORS



# ... choice of the wise buyer who compares

CM HOISTS AND PULLERS are ruggedly constructed to give you years of trouble-free service. Yet they are unusually light...easy to handle because they are constructed of the strongest alloys of steel and alumi-num. Equipped with famous CM-Alloy flexible, welded alloy steel load chain. CM CYCLONE

- Capacities from 1/4 to 10 ton.
- 1-ton model weighs only 36 pounds.
- 96% efficient—easy to operate.



CM PULLER 0 Capacities %, 1½, 3 and 6 ton.

• %-ton model weighs only 13 lbs.

Compact: stores in tool box.

 Lifts or pulls at any angle.

· Lifetime lubricated.

Write for catalog and name of your nearest CM dealer.

15



# CHISHOLM-MOORE HOIST DIVISION COLUMBUS McKINNON CHAIN CORPORATION

TONAWANDA, NEW YORK REGIONAL OFFICES: NEW YORK, CHICAGO, CLEVELAND SALES AND SERVICE ...

continued

### On the Sales Front

L. B. Foster Co.: The following four sales represenatives have been appointed: Leonard A. Mc-Govern has been assigned to the New York office and will cover the Philadelphia area: Richard P. Gurley has been named sales administrator of the construction products division of Foster's Chicago office; Donald J. Cier has joined the sales staff of the Los Angeles office and will cover the Northwest; John B. Manning will specialize in pipe sales in the Pittsburgh office.

General Motors Corp.: Euclid Division has appointed G. A. Wynkoop to the California and Nevada territory. He will work out of Oakland, Calif.

Ford Motor Co.: Donald F. Ball has been named manager of Ford Division's heavy truck sales department. He succeeds John F. McLean, Jr., who has been named executive assistant to the regional sales manager at Ford's Midwestern regional sales office in Chicago.

Chrysler Corp.: The following four appointments have been announced by the Marine and Industrial Engine Division: Bruce B. Spratling, product sales manager; M. J. Yost, manager of field operations; William M. Vollendorf, advertising and sales promotion manager; and Robert C. Loman, manager of parts and service.

General Electric Co.: The Communication Products Department has made the following two appointments in its two-way radio sales organization: John E. Strehle becomes Southern Florida district sales manager at Pompano Beach; and Jack Najork has been placed in charge of the Chicago office.

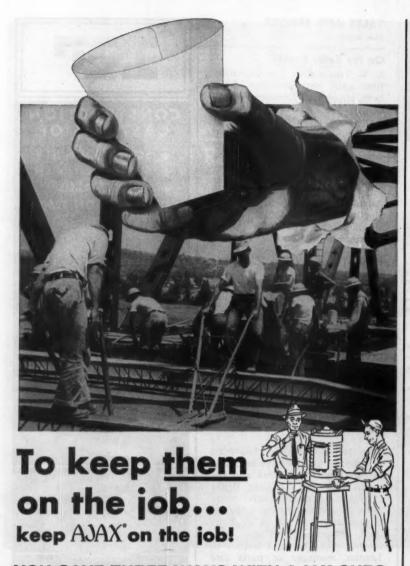
Vickers Inc.: Jack Newlove has been promoted to district manager of the El Segundo, Calif., office

### In the Main Office

Skil Corp.: John W. Sullivan has been appointed assistant to the president. A graduate of Georgetown University, Sullivan joined the company in 1957.

continued on next page





# YOU SAVE THREE WAYS WITH AJAX CUPS

CUT DRINKING SERVICE COSTS. You can put Ajax drinking service right on the job... on every job. No long, time-consuming hikes for your men to get a drink of water. Each man serves himself from the Ajax Insulated Heavy Duty Cooler. No tending necessary. And Ajax cups cost you less than many other kinds.

**REDUCE ABSENTEEISM.** Ajax service is the clean, sanitary way to put drinking water on the job. Each cup is used once and discarded... reducing danger of infections like the common cold, which can be transmitted through use of a common dipper or cup. And Ajax encourages adequate water intake needed to keep workers healthy.

PROMOTE SAFETY. Ajax Cups are available imprinted with stock safety messages. These clever cartoons spread safety consciousness among your employees in a continuous, pleasant and effective way. Also available printed to your own order.

# AJAX'CUPS



UNITED STATES ENVELOPE COMPANY

68 Prescrit St., Worcester S, Mass.; 10700 Harry Hines Bird., Dallas 9, Tex.; 5850 Hollis St., Emeryville 8, Cal.

# SALES AND SERVICE . . .

Sika Chemical Corp.: R. A. Jessen becomes chief engineer of the company. He replaces Emil Spinden who has retired. J. Wayman Williams, Jr., has been appointed manager of technical service.

Joy Mfg. Co.: Louis G. Helmick, Jr., executive vice president of the company has been elected a director. Robert W. Eager has been named vice president, manufacturing.

### **Associations**

Associated Equipment Distributors: F. J. Fitzpatrick, president of Parker-Danner Co., Hyde Park, Mass., has been elected international president of the association at its 40th annual meeting held in Chicago in January. Other officers elected were: J. A. Benson of Benson Tractor Co., executive vice president; H. J. Mayer of Western Machinery Co., vice president; R. F. Newlin of Newlin Machinery Corp., vice president; J. A. Young of F. J. Fyfe Equipment Ltd., vice president; and Braxton Blalock, Jr., of Blalock Machinery & Equipment Co., treasurer.

Power Crane and Shovel Association: At a recent meeting of the association the following officers were elected for the current year: president, Henry Harnischfeger of Harnischfeger Corp.; vice president, Wilbur L. Schield, vice president of the Schield-Bantam Co.; and secretary, Herbert S. Blake, Jr., of Organization Service Corp.

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### **Special Mention**

Shunk Mfg. Co.: The entire assets of Winget Mfg Co. have been purchased by Shunk. Purchase includes all patent rights to Winget products as well as tools, jigs, and plant fixtures. Among the earthmoving tools developed by Winget that Shunk will now manufacture are the following: land clearing tree plow; a brush rake designed to clear ground of loose brush and small trees; a stump splitter for attachment to dozers; and a spring cushion push block for absorbing shock on pusher dozers.

Motorola, Inc.: Don C. Livingston has been named manager, twoway radio sales for a 10-state southern area with headquarters in Kansas City, Mo.



This Torcon-equipped dragline gets more work by the bucket with less work by the engine.

# Self-contained oil circuit keeps TORCON efficiency high

This simple design feature is a big factor in keeping TORCON efficiency consistently high: the oil sump is an integral part of the housing—no complicated oil seals to lessen efficiency and complicate maintenance. Oil passages are cored in the housing—no extra hoses and fittings.

Easy accessibility is valuable, too. Simply remove two cover-plates, and the whole unit is fully exposed for inspection and service-no special tools needed.

The Clark-Torcon is a complete unit, massproduced, available off-the-shelf to engine and original equipment manufacturers, and to owners and operators. It's the broadest line available to industry, with a wide range of wheel diameters and a complete choice of options, for easy fitting into any torque-transmission system.

## There's a Torcon to FIT YOUR NEED



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ston twostate rters This fully illustrated, easy-to-read bulletin explains torque multiplication clearly; and indicates its many industrial applications. Use the coupon to get your copy.

# A Complete Quality Line-Clark-Torcon

All Sizes-from 15 to 600 H.P.

Broad Range of Options—readily adaptable to many applications

No Cavitation—proper oil flow prevents turbulence and formation of air pockets to cause wear and loss of efficiency

High Efficiency over wide range more work done, and reduced wear on components

Individually Cast One-Piece Elements—no welds or fabrications to distort under extreme loads

SCHWEIDER SYSTEM

CLA	R	K
EQUIP	ME	NT

CLARK EQUIPMENT COMPANY, Jackson 6, Michigan: Please send the CLARK-TORCON Bulletin					
Name	Position				
Firm	Address				
City	Zone	State			

# Construction Equipment News...

# Three Backhoe Models Offered in New Line

Ford's three new backhoes, designed for use on Ford tractors, offer a choice in boom length—10, 12 or 14 ft.

Fast mounting, easy removal are possible, the manufacturer says. Reach of the 10-ft backhoe is more than 17 ft, of the 12-ft unit, 19 ft, and of the 14-ft model, more than 20 ft. Each has a full-powered 185-deg swing. The hoes are available in bucket sizes of 12, 18 and 24 in. Bucket capacities are 2.5, 4.5, 6.0 cu ft.—Ford Motor Co., Birmingham, Mich.





# Big New Drill Designed for Hard-Rock Work

A giant drill, weighing 460 lb and using a 126-lb bit, is the fourth model in Ingersoll-Rand's line of Downhole drills. The new drill is specially designed for heavy-duty, hard-rock work.

The manufacturer says the larger bit permits greater hole spacing and reduces the number of blast holes needed. Diameter of the bit is 9 in., biggest in the Downhole line.

Called the DHD-500, the unit cleans cuttings from a hole by exhausting operating air through the drill. Cleaning air can be sent through the unit, even when the drill is shut off. This prevents material from binding the drill in a hole, the manufacturer says.

The drill has a 5-in. bore and a 7¼-in. outside diameter. Length with bit extended is 68½ in. The drill's weight, including bit, is 586½ lb.—Ingersoll-Rand, 11 Broadway, New York 4, N. Y.

## Crane and Excavator

Bucyrus-Erie's new 30-B Transit Crane can lift 45 tons with a 40-ft boom at a radius of 15 ft. The 30-B can be rigged as a 1 to 1½-yd hoe, 1 to 1¾-yd shovel, 1 to 1½-yd dragline, and as a clamshell. Maximum reach with jib is 140 ft.

The new crane's boom is fabricated of Tri-Ten steel, featuring stronger chord angles and larger cross sections.

Other features include an air-operated boom hoist, adjustable cone rollers, a 6x4 or 8x4 carrier with gas or diesel engine. Point sheaves are mounted on presealed, permanently lubricated anti-friction bearings.—Bucyrus-Erie Co., South Milwaukee, Wis.



# New Motor Grader Is Bigger, Heavier

The largest motor grader to come from Caterpillar is the new model No. 14, rated at 150 hp and weighing more than 29,280 lb. Of the machine's total weight, 22,270 lb rest on the drive wheels.

Height of the 12-ft moldboard is 27 in., compared to 24 in. on the No. 12 model.

Power for the No. 14 is provided by a turbocharged engine rated at 150 hp with an 18% torque rise — considered high for this machine's classification. Rig offers six forward, two reverse speeds. Forward speed ranges from 2.6 mph to 21.6 mph. Caterpillar Tractor Co., Peoria, Ill.

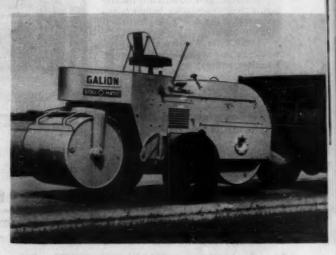
# Easy to Move From Job to Job

A pair of retractable rubber-tired wheels makes it a simple matter to move Galion's new 4-6-ton roller over the road to the next job. A truck picks up the towing hitch, then hydraulic cylinders lower the wheels to lift the steel rollers clear of the ground.

Hydraulic cylinders that raise or lower the retractable wheels are enclosed in the roller housing. A separate hydraulic cylinder maneuvers the towtongue for hitching or unhitching.

Like other Galion rollers, the new retractable wheel model has Roll-O-Matic drive, a combination of torque converter, automatic fluid transmission, and tail-shaft governor. Rolling speeds range from 0.5 to 5.6 mph. The rig is powered by a water-cooled 32-hp (at 2,400 rpm) gasoline engine that Galion says gives more than twice the needed power.—Galion Iron Works & Mfg. Co., Galion, Ohio.

continued on next page





Exclusive Austin-Western all-wheel drive puts power in front wheels for powerful pulling assist in this rough grading operation.

Pennsylvania contractor says:

# "A happy operator brings more profit!" A-W hydraulic controls reduce fatigue

Lucian M. Davidson, Davidson Bros. Contractors, Harrisburg, Pa., tells us his big 6-wheel drive and steer Austin-Western helps an operator do more work, more easily, than with any other grader.

### Front wheels powered

He says, "All-wheel drive gives constant speed without spinning wheels when we place ballast on paving jobs." There's no dead weight to push around on an A-W. Front wheels deliver pulling power to handle the roughest jobs fast.

"Operators have no difficulty maneuvering close to obstacles, buildings and corners with the A-W's all-wheel steer-

ing," he adds.

"The Austin-Western torque converter helps reduce operator fatigue. Excellent visibility from the cab facilitates precision performance. Any operator can handle this machine with ease after a short briefing."

# Controls you can feel

"Hydraulic controls react instantly to

fingertip touch, yet give you the feel of the machine. Struggle with out-of-date mechanical controls is a thing of the past. That's important, because a contented operator means more profit!"

4 and 6-wheel models available. Gas or diesel power, torque converter optional. See your nearby A-W distributor or write us. Learn today why profitminded contractors choose Austin-Westerns to boost profits with high performance and low maintenance.



Big 6-wheel A-W demonstrates easy maneuverability in tight quarters for rough or finish grading.



BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes



# **Budget-Priced Welder**

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Called the Budget 500 because of its low price tag, Hobart's new ac arc welder is rated at 500 amps, 40 v, at 60% duty cycle. Three overlapping main step settings provide 100 to 300, 195 to 475, and 375 to 625 amps. The transformer uses Hobart's "diverter path" principle. A double primary provides for operation on either 230 or 460 v. No high voltage appears across any control coil, eliminating the possibility of insulation breaking down or of high voltage appearing under the rheostat handle. The welder is 48 in. high, 211/4 in. wide, 211/4 in. deep, and it weighs 524 lb.—Hobart Brothers Co., Troy, Ohio.



# Names Easy Splicer

A new method of splicing conveyor belts that is said to take less time and labor than a vulcanized splice has been developed by the Manhattan Rubber Division of Raybestos - Manhattan. Called a Wedlok, it is a mechanical fastener splice consisting of a V-shaped joint that forms a seal under tension. It is secured by tip and tail fasteners that are anchored at the extremities of two

ows of Flexco bolt and plate faseners. The splice can be used on pelts made of natural or synthetic fabrics, cord, or any combination of belt materials with the exception of steel wire. According to the manufacturer, tests show that this type of splice is equal in strength to conventional vulcanized splices for operating tensions up to 700 lb per in. of width rating on belts of five or more piles that are at least 1/2-in. thick. The installation of Flexco fasteners across the splice cut at a predetermined angle permits fasteners to rotate slightly under tension. This causes cut edges of the belt to close tightly and form a permanent seal. No. 2 Flexco fasteners with Monel top plates are recommended on heavy - duty conveyor belts. Steel top plate fatseners can be used. Monel is also used for the special tip and tail fasteners to provide maximum abrasion resistance and long life. A special Wedlok kit containing tips, chevrons, tail plates and templates is available.

—Manhattan Rubber Div., Raybestos-Manhattan, Inc., Passaic, N.I.



### **Power Units**

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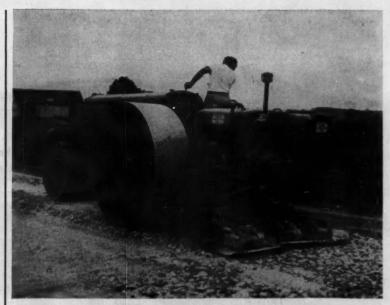
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The Kohler Company answers the need for a compact generator to power small electric tools at remote sites with two new electric plants, models 2.5MV55 and 2.5MV35. Both produce 2,500-watts, 180-cycle, 3-phase, 115-volt dc. However, they differ in that the 2.5MV55 produces 230-volts ac, and the 2.5MV35 produces 115-volts ac.

Kohler says the new units can serve all commonly used portable electric construction tools. Both models include as standard equipment recoil starter, 2-gal fuel tank, mechanical fuel pump with fuel filters and shutoff valve, oil bath air cleaners, vibro mounts, two ac receptacles, and one dc receptacle.—Kohler Co., Kohler, Wis.

continued on next page



Austin-Western Roller-Compactor combines static and vibratory force to work fines into stone base aggregates.

# Austin-Western Roller-Compactors let you lay fewer courses—cut costs!

Austin-Western Roller Compactors do a deeper, faster consolidating job. They combine the advantages of both vibratory and static compaction, assuring maximum density of all types of material and profitable operation.

# Vibrates up, rolls down

For vibratory compaction, three 450-lb. shoes are attached to a basic 3-wheel roller. Each shoe, hydraulically operated, vibrates approximately 2200 times per minute. This motion extends to the bottom of the lift and then reacts upward, thereby keying low-level material for maximum consolidation in the fewest number of passes. At the same time, the roller unit applies static pressure so as to effectively seal the surface.

There is more profit to be made with an Austin-Western Roller-Compactor. It operates at speeds up to 1 mph. Fewer passes are required because of its efficient double action. Fewer courses are required. It compacts lifts of stabilized material up to 12 in. in successive passes . . . no more need to

remove previous courses if final tests reveal insufficient density.

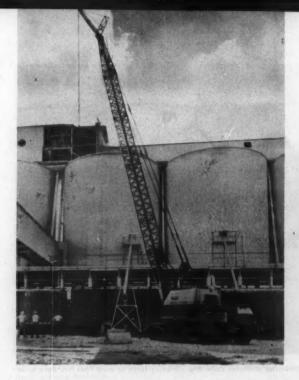
### Designed for rugged service

Maintenance requirements are low. Vibratory units are sealed in oil, completely protected from dirt... designed for dependability under rugged service conditions. Available now for Austin-Western and most all other makes of 3-wheel rollers. Get full information today on the cost cutting Austin-Western Roller-Compactor. See your nearby A-W distributor or write to us.



Vibratery widener attachment—for use with any 3-wheel roller equipped with A-W Roller-Compactor unit . . . may be mounted left or right.





**EQUIPMENT NEWS...** continued

### **Manitowoc Shows New Crane**

Manitowoc's new 60-ton truck crane converts easily to clamshell or dragline. Separate engines power the crane and the truck carrier.

Stabilizing outriggers on the new model are standard, and the front-bumper counterweight is removable. Other features include two-axle drive, air brakes, and power steering.

Called the 2900, this new model reaches highway speeds of 35 mph. A choice of several makes of gasoline or diesel engines is offered with the 2900.—Manitowec Engineering Corp., Manitowoc, Wis.

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# **Heavy Duty Finishers**

Barber-Greene is producing two new heavy duty asphalt finishers—the SA-60, mounted on high-speed crawlers, and the SB-60, with pneumatic tire mounting.

Wheels or crawlers on both models are set well within normal laying width to ease matching joints and working next to curbs. Both travel from 14 fpm to 12 mph, forward and reverse.

The new finishers feature dual-range power steering. And the manufacturer claims both rigs turn easily with one hand under any paving or traveling conditions, hold a straight line or constant curve without jockeying, and resist abnormal side pressures on slopes or extreme curves.—Barber-Greene Co., Aurora, Ill.



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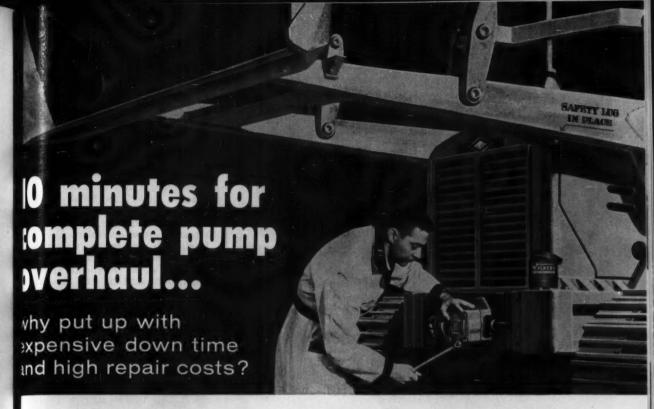
Page 216 - CONSTRUCTION METHODS and Equipment - March 1959

# **High Output Plant**

The first 1,000 ton per hour central-mix stabilization plant is also the first with double discharge hoppers. The plant includes a twin shaft pug-mill type mixer and 5-cu-yd discharge hopper with hydraulic clamshell gate. Air brakes are optional.

The plant prepares stabilized aggregate base material, but by adding a silo, it can be converted to a soil-cement stabilization plant. A self-priming water pump and precision water meter regulate water flow to the spray bar. The unit is fully controlled from a push-button panel on the operator's platform.—Boardman Co., Oklahoma City, Okla.

continued on page 218



on the spot maintenance with



"High Performance" Pumps\* keeps your jobs on schedule PATS. & PATS. PENDING

Without removing the pump from the vehicle, and without disconnecting hydraulic lines, the new Vickers "High Performance" pump can be completely overhauled by simply inserting a new pumping cartridge. The pumping cartridge contains all wearing parts in one replaceable unit and results in new pump performance. Write for Bulletin No. M5108 for performance characteristics.



1. After safety, cleanliness and draining instructions have been followed per vehicle manufacturer's recommendations, take out four cover bolts and remove cover.



2. Take out old pump cartridge and insert new one. The cartridge includes cam ring, rotor, vanes, etc. -all parts in one assembly.



3. Replace cover and you have the equivalent of a new pump ready for long, trouble-free service.







# VICKERS INCORPORATED

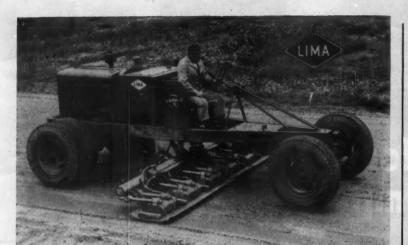
DIVISION OF SPERRY RAND CORPORATION

**Mobile Hydraulics Division** ADMINISTRATIVE and ENGINEERING CENTER Department 1494 . Detroit 32, Michigan

Application Engineering Offices: • ATLANTA • CHICAGO • CINCINNATI CLEVELAND • DETROIT • GRAND RAPIDS • HOUSTON • LOS ANGELES AREA (EL Segundo) • MINNEAPOLIS • NEW YORK AREA (Springfield, N.J.) PHILADELPHIA AREA (Medile) • PITTSBURGH AREA (M. Lebenon) PORTLAND, ORE. • ROCHESTER • SAN FRANCISCO AREA (Berkeley) SEATTLE • ST. LOUIS • TULSA
ALSO SOLD AND SERVICED IN AUSTRALIA, ENGLAND, GERMANY & JAPAN IN CANADAL VIGINATIONS COMMENTS.

IN CANADA: Vickers-Sperry of Canada, Ltd., Toronto, Montreal & Vancouve

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921



Lima Roadpacker compacts gravel base, from bottom up by vibration, on Michigan highway job.

# LIMA Roadpacker gives better compaction in fewer passes to cut costs for contractor

"It's a real timesaver, our Lima Roadpacker," says Vice President Jerry Gooding of O. E. Gooding & Co., Ypsilanti, Mich. "It's fast... gives us better compaction in fewer passes than would be required with other compaction equipment."

# Variable widths, deep compaction

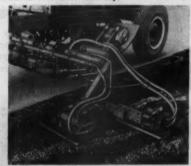
"We like the Roadpacker's ability to compact in varying widths with either 4, 5 or 6 shoes. We couldn't do this with the compaction equipment we had before.

"Vibration from those shoes really penetrates to do an efficient compaction job for us. We often get required 100 per cent density in one pass. In most cases, including sand, not over two passes are required."

### Highway travel without permit

"The Roadpacker moves about the job, or from job to job, under its own power, That's an important saving in trailer rental costs and time alone. The shoes can be raised hydraulically. Operator can fold back end shoes in a few minutes for highway travel. Travel speeds up to 30 mph!"

Learn how you can cut your compaction costs by using the Lima Roadpacker for efficient high-density compaction. Lay fewer courses . . . compact up to 10 and 12-in. layers in fewer passes . . . compact in reverse as well as forward to end time-wasting deadhead backups. Get all the facts on the Lima Roadpacker—see your local Lima distributor or write us for free bulletin today.



Widener attachment — Vibrating ahoes compact material in widening trench while Roadpacker runs on existing pavement. Easily adjusted for various width trenches. Ends need for expense of special trench roller.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio BALDWIN · LIMA · HAMILTON 592





# EQUIPMENT NEWS ... continued

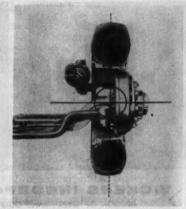
# **Deep-Tread Tire**

A low-priced combination highway and traction tire is now available from Firestone. Extra tread depth-from 48 to 65% greater than regular highway tires, depending on size—is the main feature of the new All-Traction tubed tire. Three continuous ribs circle the center of the tire to help give high speed. vibration - free operation. Deep traction bars on the tire's shoulder give needed bite for off-thehighway work. Available sizes are 7.50-20, 8.25-20, 9.00-20 and 10.00-20-Firestone Tire & Rubber Co., Akron 17, Ohio.



# Folding Barricade

Pacific Mercury has introduced a non-collapsible, folding barricade with steel legs and marine plywood crossbars. The flasher light, in either neon or transistorized models, is available with a standard 4¼-in. head, 7- in. head, or 360-deg dome-type head.—Pacific Mercury Co., 14052 Burbank Blvd., Van Nuys, Calif.

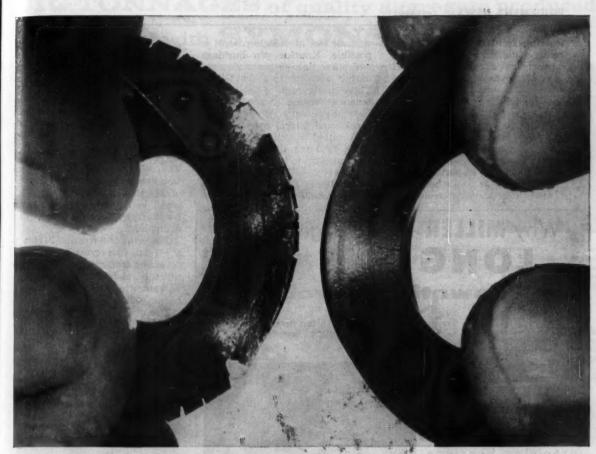


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# Steering Made Easier

Easier steering without power assistance is claimed for the new Timken - Detroit center - point



Two torque converter seals, subjected to 300 hours of service at 325° F., show added protection of D.A Torque Fluid. Seal on left, used with ordinary torque fluid, is brittle and cracked, has shrunk excessively. Seal on right, used with D.A Torque Fluid, remains resilient and reveals no cracks or deterioration. It was protected by D.As exclusive preservative.

# Prevent seal trouble, increase converter efficiency with D-A TORQUE FLUID

Better performance, less maintenance and longer equipment life . . . these are among the benefits you get when you specify D-A Torque Fluid for (1) heavy-duty automatic transmissions, (2) hydraulic systems and (3) rotary compressors.

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Note these advantages: D-A Torque Fluid possesses superior oxidation stability, provides increased efficiency through carefully controlled viscosities and allows operation in even the coldest weather because of minus 35° F. pour point.

But that isn't all! D-A Torque Fluid is ideal for all types of rotary compressors because special hightemperature oxidation inhibitors prevent formation of sludge and varnish, extend compressor life and permit longer operation periods between lubrication changes.

And D-A Torque Fluid gives a big bonus in the protection of rubber seals... extends the life of seals, prevents leakage. This added protection is accomplished by a special seal preservative found only in D-A Torque Fluid. Seals last indefinitely... shrinkage and cracking are eliminated... swelling is controlled to an ideal maximum of 0.2%.



Lubricating heavy-duty equipment across the nation since 1919.

D-A LUBRICANT COMPANY, INC. . INDIANAPOLIS 23, IND.

steering front axle. In the new center-point design, the king pin is perpendicular to the ground line. It moves outward into the wheel so that the center line of the tire and the wheel are on a relatively common plane. This permits the king pin to act only as a pivot point while the vehicle load is supported solely by the axle. Because the king pin is relieved of the job of partially lifting the load as the wheels are turned, less steering resistance

without loss of vehicle control is possible. Knuckle pin bushings and other linkage parts also are moved outward into the wheel. These parts require less maintenance because of the reduced load they carry. Because road shocks and lateral pressures are transmitted directly to the axle beam, tires and all other steering parts are said to have a longer life expectancy. — Transmission and Axle Div., Rockwell-Standard Corp., Detroit 32, Mich.



# **Power Traction Bridge**

The self-propelled Power Traction Bridge that travels at a speed of 2½ fpm can be used as a finisher, belter, and as a crossover for carrying tools, water, and equipment.

Powering the traction bridge is a 2¾-hp, four-cycle engine with reversing transmission. The manufacturer claims the bridge works without attention once it has been

put in gear.

The unit is available on single finishing, double float, and burlap bridges. Optional equipment includes a belting mechanism that can be disengaged when not in use.—Cleveland Formgrader Co., Avon, Ohio.



# **Operator Has It Easy**

To reduce operator fatigue, several new features have been built into the operator's compartment of the new model 304 tractorshovel, latest unit in Yale & Towne's Trojan line. Shift levers are now within easy reach of the left hand and the operator sits comfortably in an adjustable foam rubber bucket seat. A new panoramic instrument panel has all the gages necessary to operate the rig within easy view. Yale & Towne's patented "safety-curve" bucket lift arms, which are below the level of the operator even when fully raised, allow 360-deg visibility and maximum safety. The new tractor shovel is powered by a six-cylinder diesel that develops 160 hp at 2,500 rpm. It is equipped with a power-shifted, four - speed transmission and torque converter that provide speeds from 3 mph in low gear to



★ Trouble-free operation — no costly replacement of bushings

★ No regular lubrication necessary

★ Wheels stay in line for the life of the trailer — saves on tire wear

★ No premium for this quality — MILLER Tilt-Tops actually cost less
than many inferior trailers.

One man tilts, "drive-on-loads"

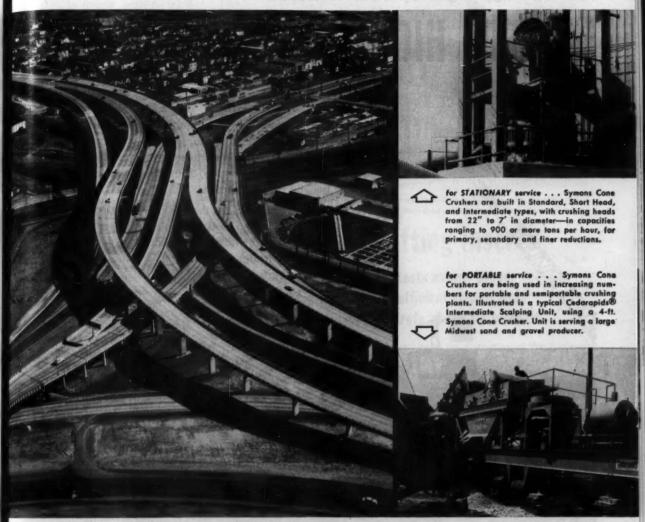
less than TWO minutes!

With MILLER's fast hauling, you gain high hourly rate productive time for both operator and rig . . . boost output!

Tailer Inc.

457-R South 92nd Street, Milwaukee 14, Wisconsin

# BIG TONNAGES of quality aggregate produced at low cost with SYMONS Cone Crushers



Typical of today's modern highway construction is this view of the dern Freeway in Oakland, California, showing three levels of highway structure over two levels of railroad.
(Photo courtesy California Division of Highways)



C-150

The big tonnages of specification aggregate, bituminous mixes, crushed sand and cement required to meet the ever-increasing needs of the construction industry are produced by Symons Cone Crushers at low cost. Good reasons why these efficient crushers are the leading choice of producers and contractors building highways, dams and hydro projects, bridges, as well as commercial building construction,

It will pay you to specify and use Symons Cone Crushers for both stationary and portable service. Write for descriptive literature.

NORDBERG MFG. CO., Milwaukee 1, Wisconsin



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SYMONS . . . a registered Nordberg trademark known throughout the world

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for heavy, high-speed traffic:

# LACLEDE HIGHWAY REINFORCEMENT

The new Mark Twain Expressway, sweeping into St. Louis from rapidly-expanding northwest suburbs, will relieve a troublesome traffic-congestion problem. As it nears the downtown district, this modern freeway will be elevated for approximately one-half mile, spanning some of the city's most heavily traveled streets.

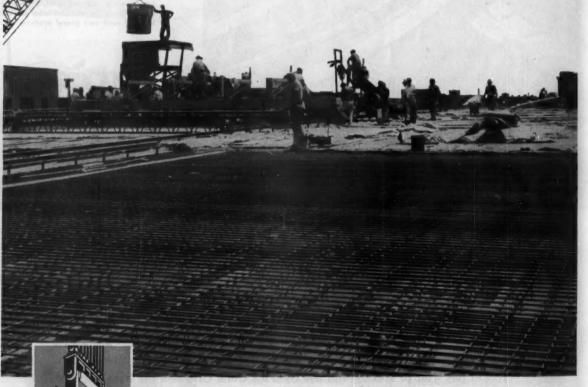
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In this overpass alone, more than 700 tons of Laclede reinforcing steels have been used. And in many other highway projects throughout the midwest, Laclede steels are imparting the strength and durability needed to carry today's high-speed, high-volume traffic.



General Contractor: Mary Construction Co., Cape Girardeau, Mo



LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI

Producers of Steel for Industry and Construction

23 mph in fourth, both forward and reverse. Other features of the 27,400-lb machine are power steering and brakes, axle differentials that transfer power to wheel with traction, 40-deg bucket tip-back action, and a maximum lifting capacity of 18,000 lb. The new Trojan has a dumping clearance of 11 2/3 ft under the hinge pin and 9 ft under the bucket cutting edge. At this point, the dumping angle is 54 deg for fast bucket discharge.-Yale & Towne Mfg. Co., Trojan Div., Batavia, N.Y.



# Improves Rotor Blades

Rotor blades in the new line of Davey portable rotary air compressors are reported lighter, more wear resistant.

The Davey Hydrovane Rotary line includes portable compressors of 125 to 600-cfm capacities. Individual compressors are said to have 50% fewer working parts than others of the same capacity.

Units are designed to deliver air at 100 deg above ambient temperature.—Davey Compressor Co., Kent, Ohio.



# Roller Has Two Engines

Tampo's new twin-engined, variable weight, pneumatic - tired roller has torque converter drive and an automatic clutch reverse mechanism to speed the rolling cycle. The 11-wheel roller has a ballast range from 10 to 30 tons. Ground pressure varies from 300 to 690 lb per linear inch of tire

# **Precast** Concrete **Components** Lifted and **Placed With**



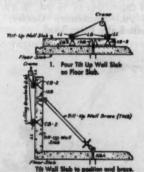
Precast wall slab being tilted into place by means of Richmond Lifting Inserts and Lifting Brackets.

# Richmond Lifting Inserts

Certified laboratory tests assure proper strength rating for efficient design and performance in concrete at usable strength

placing of precast concrete wall slabs, columns, beams, girders, piles, etc.

No matter what type of precast units are involved, Richmond can supply exactly the right type of insert for the specific job.



These units are designed with adequate extra strength and for simple operation in lifting and bracing precast concrete compo-

Richmond has developed and test- Send for your copy of the Richmond ed a complete line of Lifting Inserts Data Book on Lifting Inserts giving and accessories for handling and complete technical data, dimensions, working loads and ultimate strengths in various strengths of concrete. At the same time ask for your copy of the

latest Richmond Handbook showing the complete line of form tying anchorage and accessory devices for concrete construction backed by 47 years in this field.





# RICHMOND SCREW ANCHOR COMPANY, INC.

816-838 Liberty Ave., Brooklyn 8, N. Y. or 315 South Fourth St., St. Joseph, Mo.





Built to withstand the hard knocks of mining and construction service, "BOSS" Valves are also ideal for general use on pipe lines, hose lines, compressor tanks, etc., and for the handling of water. They do not require packing.

Bronze plug firmly seated by spring tension against harder metal of valve body is automatically honed to perfect seat as handle is turned. A straight, full-flow opening extends through valve body and plug, providing greater capacity with no friction loss. Valve opens or closes by a quarter turn of the handle.

INTERNALLY ATTACKED MARGLE— In sizes 36" to 1½" valve stem and handle are combined in a strong onepiece forged steel unit which is anchored to the brenze plug within the brenze plug within the valve body. This patented feature eliminates stem and handle breakage. Sizes ¼", ½", ½" and 2" harve externally riveted bondles.



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# EQUIPMENT NEWS... continued

width. Overall rolling width is 94 in. Tires are 9.00-20, 12 ply. The twin engines provide up to 130 hp for work on tough base compaction jobs in deep lifts. Five speeds up to a maximum of 17 mph are available both forward and reverse. Hydraulically powered steering and brakes are standard. The roller is 17 2/3-ft long, 94 in. wide, and 97 in. high. Wheel base is 14 1/3 ft.—Tampo Mfg. Co., Box 4248, Station A, San Antonio 7, Texas.



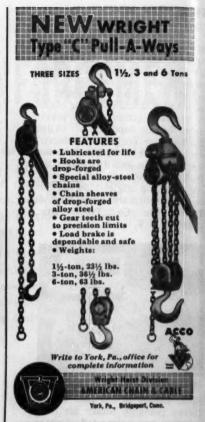
# Low-Profile Loader

A new low-profile front-end loader and dozer is designed to work either underground or on the surface. It can operate under headings as low as 4 ft, and it can reach up to dump at a maximum height of 6 ft. A 15-hp, reversible air motor powers the rig through a direct drive, three-speed transmission. It travels at speeds of up to 5 mph. The machine is equipped with hydraulic steering clutches and hydraulic bucket control. It is available with bucket capacities of % yd, % yd, and 1 yd.—Machinery Center, Inc., Salt Lake City, Utah.



# **Adjustable Blades**

A 39-in. power trowel for floating and finishing concrete slabs has been introduced by the construction equipment division of Thor. The machine has adjustable blades whose pitch can be





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is modern, high speed concrete forming

# HIS IS UNI-FORMING ... THE FASTEST GROUND-TO-GROUND SYSTEM

of concrete forming capable of handling virtually any type of poured concrete structure. UNI-FORMING is faster because assembly of UNI-FORM Panels with UNI-FORM Ties and Tie Keys is a simple mechanical (and automatically accurate) process . . . faster because minimum alignment and bracing is required on 1 side only . . . faster because every forming requirement is engineered into the system. In addition to its speed you'll find that the UNI-FORM System of concrete forming has many other advantages you can use to save time, money and labor.

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USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

# More For Your Money New HOMELITE 3000 Watt Generators

You get more, you save more, with the new Homelite Model 8A Generators. You get more production power. Weighing only 140 pounds, complete with built-in gasoline engine, the 8A gives you 3000 watts. You get the power you need for electric saws, drills, floodlights and other labor-saving tools. You get the power you need for more work in fewer man-hours, quickly and easily.

Just as important, you get more performance with less maintenance and less operational trouble with the new Homelite Model 8A Generators. No rheostats or other controls to operate. Voltage is automatically controlled within four percent from no load to full load. There are no DC brushes. No commutator. No DC windings on armature. No trouble makers to slow down work and run up fix-it costs.

Three models are available . . . 115 volt and 115/230 volt, both 60 cycles, AC plus the 180 cycle model for running most efficient high cycle tools. Ask for free demonstration soon. The sooner the better for you.

Homelite factory branches are located throughout the country. Your nearest one is as near as your phone. Call them or write for convincing demonstration or rapid service in any way.



HOMELITE • A DIVISION OF TEXTRON INC., 1003 RIVERDALE AVE., PORT CHESTER, N.Y. In Canada — Terry Machinery Co., Ltd.

# EQUIPMENT NEWS...continued

changed while the trowel is in motion by operating a simple handle control. Blades are 7x13 in. Design features include a low center of gravity, unit-frame construction, automatic clutch, and a guard ring that permits the trowel to operate within ½-in. of pipes and other obstacles.—Thor Power Tool Co., 175 N. State St., Aurora, Ill.



# **New A-C Diesels**

Two new heavy-duty diesel engines have been added to the Allis-Chalmers line. One engine, the 21000 (above), is turbocharged and develops 340 hp at 2,000 rpm. The other is the 16000 naturally aspirated engine that reaches 230 hp at 2,000 rpm. Both are 6-cylinder, 4-cycle, in-line engines with 5½-in. bore, 6½-in. stroke, 844-cu-in. displacement, and 14.5-to-1 compression ratio.

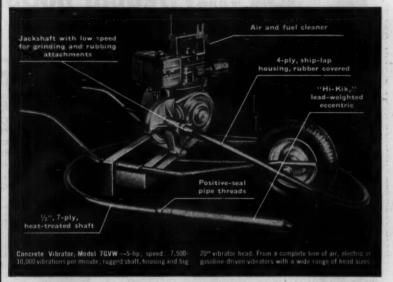
All engine components are interchangeable with the exception of the turbocharger and its related parts. Basic weight of the engines is about 3,000 lb.

Allis-Chalmers says the new engines give quick, easy starts (even in cold weather), fast acceleration, a clear exhaust throughout the speed and power range, and low fuel consumption over a wide range of loads and speeds.

Special features are five-ring aluminum pistons and cast iron cylinder sleeves with flame guards at the top to help prevent compression and water leaks, Both have full-pressure lubrication.

The company's HD-21 crawler tractors are now powered by the 21000. The 16000 now powers the company's HD-16 crawler tractor and its TS-260 motor scraper. Both engines are also available as 130-kw to 200-kw standby generator sets and for other applications.—Allis-Chalmers Mfg. Co., Milwaukee, Wis.

# POWER to boost job efficiency with REMINGTON tools





Planer, Model 3P—Sealed transmission and bearings; 3" width; depth: adjustable, 0-1/4";full-grip rear handle with trigger switch; 8.4 amp, AC/DC motor. Speed: 13,500 rpm.



Pneumatic Chain Saw, Model 2P— Heavy-duty; 18", 24" or 30" bar; roller bearing nose for fast cutting, longer bar life; automatic motor oiler; trigger throttle in hand grip.



Electric Drill, Medel 125—1/2" capacity; geared key-type chuck; 5amp motor; removable auxiliary handle; hall and needle bearings; weight: 81/2 lbs.; free speed 500 rpm.

Powerful, rugged, easy to handle—Remington Power Tools help you boost output and ease the tough jobs. They're precision-built for long service and minimum maintenance. Your Remington distributor stocks and services the industry's widest selection of power tools and parts,



Electric Saw, Model 106 — 10" blade; 13-amp motor with powerful worm drive; cuts full 3½"; complete with combination blade, wrench and steel carrying case.



Power Trawei, Madei TG4-36—2¼hp, 4-cycle, gasoline-powered engine; 36" ring size; automatic-reconstantes; starter; centrifugal clutch disengages at idle; safety throttle control.

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EFFICIENT FOR YOU. REMINGTON
POWER TOOLS ARE AVAILABLE IN
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ALBERT DAVIS, president. Davis Construction Corp. A subscriber to CONSTRUCTION METHODS AND EQUIPMENT Heads up \$3 million contracting firm

# Why medium-size are important

The backbone of the construction industry is the construction contractor. And the industry is made up of contracting firms of all sizes; big giants, medium size firms, and small ones. They all combine machinery, materials and manpower into a working operation that will yield an estimated \$52.3 billion of heavy construction in 1959.

Let's take a look at a medium-size contracting firm . . its role in the industry . . . what types and amounts of work it does . . . equipment it owns and operates . and other aspects of its business.

Davis Construction Corporation of Hicksville, Long Island, N.Y. had its beginning in 1920. It was founded by Louis Davis in Sunapee, New Hampshire. Albert Davis, current president, and his brothers, Frank and Charles, joined the firm in later years. In 1926 the company moved its headquarters to N.Y. At that time the firm had a concrete mixer, some forms and about ten men. Their business for the year was under \$50,000.

From private work, Davis moved into grading, roadbuilding, bridges, airports and sewage construction, obtaining contracts from state and municipal governments. Operations were extended to New Jersey, Pennsylvania, Connecticut as well as New York. More and more equipment was added. In the period 1948-57, Davis Construction Corp. completed \$26 million of construction; \$3.5 million in 1957. Today the permanent staff numbers forty and up to 400 men are on the payroll at peak of operations. The firm's equipment inventory has expanded to 273 units of all types.

### \$2 million of equipment important to Davis' success

According to Mr. Albert Davis, president, much of the firm's growth and success can be attributed to his construction equipment and how he applied it. "We are always ready and willing to purchase new equipment and apply it in our type of work along with new techniques." Davis claims to be the first to use Le-Tourneau scrapers and diesel tractors in the Long Island area. As in the past, Mr. Davis is constantly on the lookout for equipment that will make his operation more efficient and profitable.

"Because of the nature of our work," says Mr. Davis, "it is profitable for us to own and operate a large inventory of heavy equipment. In large earthmoving operations we have even had to rent some equipment. When our equipment is not in use we rent it. By purchasing the amount of equipment we have, we have been able to maintain a competitive edge on certain contracts." Here is the breakdown of major equipment owned by Davis Construction Corp.

- 4 compressors (Ingersoll-Rand, Schramm)
  5 graders (Caterpillar, Austin-Western)
  2 front end leaders (Michigan)
  30 pumps (Marlow, Gorman-Rupp, Homelite)
  6 rollers (Buffalo-Springfield, Bros, Ferguson)
  11 scrapers (Caterpillar, LeTourneau, Isaacson)
  9 cranes, draglines, shovels, backhees (Bucyrus-Erie, Koehring, Link-Belt, P&H
- 45 crawler tracters (Caterpillar, Allis-Chalmers, International Harvester)
  8 rubber tired tracters (Caterpillar, International
- trucks, trailers, and pick ups (Mack, Dodge, Chevrolet,
- Ford, Willys, GMC) cars and station wagons (Plymouth, Chevrolet, Cadillac,
- 10 welding machines (Lincoln, Hobart)
  1 paving unit (Koehring paver, Jaeger spreader,
  Lakewood finisher)

- 22 two-way, radios (RCA, Motorola)
  12 rakes (Fleco, Davis)
  14 saws (Skil, Wright, McCulloch, Homelite)
  2 stene spreaders (Buckeye, Birch)

- trailer, field diffices sweepers (Mough) track pin press (Rodgers, Berco) steam cleaners (Jenny) generators (Onan, Kohler, Homelite) Pulvimixer (Seaman-Andwall)
  Tournadozer (LeTourneau-Westingholdisc harrows (Rome, John Deere)

\$8 million joint venture on Horace Harding Expressway, M.Y. Required drainange, grading and paving 71/2 miles and the construction of 10 bridges.



Below, Louis Davis, founder of Davis Construction Corp. shown operating tractor and hauling wagon used for rock removal. Photo taken around 1920.



# contractors like Davis Construction Corp. to the construction industry!

# Management, superintendents, foremen and operators influence machinery and material purchases

Equipment and material purchasing at Davis Construction Corp. is a vital operation. Add buying decisions result from consultations and recommendations and opinions of many men on different levels. As Mr. Davis says:

"We have equipment operators, superintendents and foremen with many years of construction experience. These fellows work with our equipment, know our requirements and what equipment will do. When we're considering equipment and material purchases, it's just sound business to consult with these men before I and my brothers, Charles and Frank make our final decision regarding type and brand of equipment or material. Our own experience coupled with that of our top men on all levels help us to make sound buying decisions."

### \$1,000,000 invested in materials in '57

The proportion of Davis' gross dollar volume of construction that goes into materials used in construction is significant. This medium-size contractor invested \$1 million out of \$3.5 million in 1957. The bulk of this expenditure was for cement, lumber, steel and stone.

# \$500,000 a year goes for maintenance

According to Albert Davis, the success of his operations is also dependent on a strict maintenance policy. Anywhere from 20 to 40 men are used in two maintenance shops. Portable shops are used right on job sites. Strict records show the number of hours each machine is in operation, when it was last worked on, every part that went into it. Records speed up repairs and cut downtime. Davis carries over \$100,000 worth of maintenance and repair parts such as tracks, rollers, sprockets, tires, bearings, and other heavy equipment parts.

"I have been reading CONSTRUCTION METHODS since 1930"... says Albert Davis, president, Davis Construction Corporation.

"I have found the articles on new methods, techniques and equipment in CONSTRUCTION METHODS very helpful to me. Ideas that have proved profitable to other contractors are of special interest. We often apply them, and try to improve on them. The kinds of information this magazine presents has been very useful to us. I also read the advertisements on products. I'm interested in purchasing."

# CONSTRUCTION METHODS reaches and is read by important contractors

In addition to Mr. Albert Davis, eight other key personnel in Davis Construction Corp. subscribe to Construction Methods magazine. Davis in one of the numerous medium-sized contractors who are playing an important part in the construction industry... and whose machinery, manpower and know-how are contributing to the nation's growth and progress.

Davis is just one of the many important contractors who are long-time subscribers to Construction Methods magazine. The direct route to 13,250 large, medium-size and small contracting firms, and their key personnel, is through the advertising pages of Construction Methods...the contractor's magazine.

# Construction Methods AND AND AND

A McGraw-Hill Publication 330 West 42nd St., N. Y. 36, N. Y. 47,395\* paid circulation





\*ABC Publisher's Statement, Dec. 31, 1958

Left and right below show Davis' heavy equipment in operation on \$2½ million Idlewild Airport project. 4½ million yds of earthmoving, grading for runways, drainage and stabilizing.





# YOUR GUIDE to Guaranteed Rough-Weather Protection!



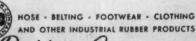
will serve as your source of supply for coats, overalls, suits, boots, shoes, hats...in styles and materials to meet every requirement. All items made to Goodall's high standards for workmanship, comfort and durability.

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# New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy, write directly to the manufacturer at the address given.

LUMBER DIRECTORY—A listing of 400 Western Pine Region lumber manufacturers and the products and services they provide is contained in the 1959 directory of the Western Pine Association. Included are mill locations, sales offices, and product details. Estimated capacity of each mill is also indicated.—Western Pine Association, 510 Yeon Building, Portland 4, Ore.

LEGAL TEXT — "Legal Aspects of Construction" is the title of the latest book by Walter C. Sadler, engineering and legal consultant. The book includes illustrated examples of boundary problems, lateral support, foundation rights. and available remedies at law and in equity. A feature of the volume is its coverage of the law "at boundary" in logical sequence and in unusual detail. Sadler is a member of the American Society of Civil Engineers and the American Bar Association. Price of the book is \$8.50.—McGraw-Hill Book Co., Inc., 327 West 41st St., New York 36, N. Y.

POLE-TYPE BUILDING—A second edition of "How to Design Pole-Type Buildings" has been issued for those who plan, design, or build this type of structure. Illustrations and text show how to compute live, dead, wind loads, and stresses for every structural member of a pole-type building. Cost \$1.50.—American Wood Preservers Institute, 111 West Washington St., Chicago 2, Ill.

CONCRETE FINISHING—A 4-p brochure describing the new Thor vibratory concrete finishing screed now is available. The booklet, JE 2346, outlines the engineering features of the new lightweight screed, which has double beam construction with "strap-action" for strike off and compacting to finish concrete slabs in one operation. — Thor Power Tool Company, Prudential Plaza, Chicago 1, Ill.

continued on page 232



# This dipper sees its dentist just twice a year

Because its teeth are two-part Amsco®"5implex". Once, another brand of teeth was used on this 3-yard Amsco welded dipper at Vigus Quarries Inc., in Robertson, Mo. The constant smashing (9-hour, 5-day week) into jagged limestone material wore them into replacement in 6 to 8 weeks. The first set of standard design Amsco Simplex teeth was in service from May 20, 1958 through October 31, 1958—twenty-four weeks!

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Says Fred Weber, Jr., vice president of Vigus Quarries Inc., "The Simplex record speaks for itself . . . 3 to 4 times longer service. Now we've got

Simplex points on all three of our machines and the saving is considerable."

Amsco Simplex's special alloy reversible tips are the answer to your dipper's high "dentist" bills. We'll be glad to send you a booklet containing reports by Simplex users and describing Simplex teeth completely. Write for it today.



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American Manganese Steel Division Chicago Heights, Illinois

# NDIA DRINKING WATER & SUPPLY TANK NO. 75G



Replaces unsanitary bucket and dipper. Portable. Push button faucet. Takes cold, clean water to workers right on the job. 5 gal. steel tank is curved to fit the back. Sturdy construction. Highly popular.

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# **NEW PUBLICATIONS...**

**BITUMULS** — "Bitumuls Surface Treatment Manual," a new 57-p booklet, is a guide to the selection and application of road surface treatments. Included are a glossary of terms, material and quantity tables, a section on equipment and construction procedure, and an appendix of useful tables .-American Bitumuls & Asphalt Co., 320 Market St., San Francisco 20, Calif.

CEMENT LINING-A new catalog describing a process of inplace centrifugal cement lining of pipes from 4 to 144 in. in dia is available from the Centriline Corp., a subsidiary of Raymond International Inc. — Centriline Corp., 140 Cedar St., New York 6. N. Y.

FLOODLIGHT CATALOG-

Crouse-Hinds has issued a complete floodlight catalog, No. 320. It is set up in loose leaf form with colored divider sheets that separate various sections. The catalog includes lists and prices for the complete floodlight light. New sections have been added on "How to Select Floodlights," "Mercury Vapor Floodlights," "Hazardous Area Lighting," and "Floodlight Poles."-Crouse-Hinds Co., Syracuse 1, N. Y.

CASTINGS-A new catalog describes in detail the Brillion line of gray iron castings. Included are such items as trench grates, manhole steps, manhole frames and covers, and catch basin inlets.-Brillion Iron Works, Inc., Brillion,

NEW SHEETING METHOD—A 4-p folder describes the contact method of sheeting deep excavations. It uses random lengths of horizontal timber planks installed against the face of the excavation by bolts and reaction bars across pairs of planks. Soldier beams provide the basic anchorage. Patent is pending on the method. In some situations it can save money over steel sheet piling.-Contact Sheeting, Inc., The Biltmore, 55 East 43 St., New York 17, N. Y.

TRUCK CRANE—A 12-p catalog describes the Lorain 107, a 7-8 ton truck-mounted crane that is convertible to shovel, dragline, clamshell, or backhoe. The 107 is a superstructure that is available for mounting on commercial car-

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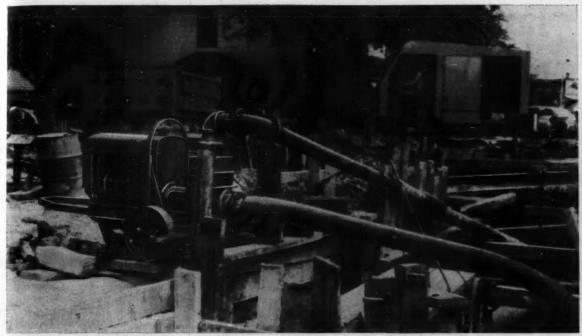
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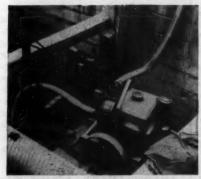


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NEW PUBLICATIONS ...

riers. Hydraulic controls, open, uncluttered design, precision boom lowering device, and the patented Lorain square tubular-chord boom are some of the features described. — The Thew Shovel Co., Lorain, Ohio.

HOTEL GUIDE—A 96-p booklet lists Sheraton Hotel facilities and services available in 1959. Included are complete descriptions of all Sheraton Hotels in the U. S. and Canada. — Sheraton Hotel Corp., 470 Atlantic Ave., Boston 10, Mass.

CONCRETE FORMS — An 8-p booklet, Form AP-59, describes All-Ply panel forms and accessories. Included are examples of job applications and descriptions of clamps and brackets for special situations. — Superior Concrete Accessories, Inc., 9301 King St., Franklin Park, Ill.

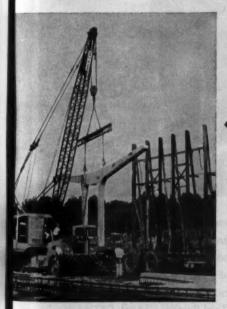
WHEEL TYPE DITCHER - A 16-p folder describes Barber-Greene's new model 774 wheeltype ditcher. The following unique features are described in detail: dual-range hydra-crowd or hydraulic crowding control; flexible drawbar; a new digging wheel; an all hydraulic spoil conwrap-around chains and assuring equal contact on both sides of the wheel :an all hydraulic spoil conveyor drive; special trouble-free crawler design; automatic electric overhead protection; hydraulic brakes; hydraulic boom hoist and other use of hydraulics in controls. - Barber-Greene Co., 400 No. Highland Ave., Aurora,

PAINT CHART—A paint chart by the Wilbur & Williams Co. helps paint users determine what paint products to select for specific maintenance jobs and how to compare available paints offered for such conditions. The check chart outlines commons problems and recommends specific coatings Wilbur & Williams Co., 130 Lincoln St., Brighton 35, Mass.

BACK RIPPERS—A new folder illustrates how Preco back rippers, which are available for all types and sizes of bulldozers, can boost production by converting dead time into productive time by ripping as you back.—Preco Inc., 6300 East Slauson Ave., Los Angeles 22, Calif.



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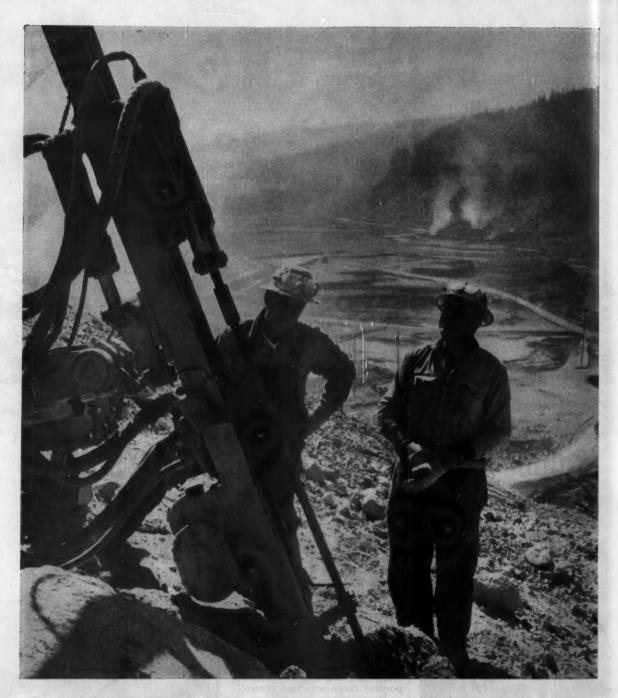
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Page 238 — CONSTRUCTION METHODS and Equipment — March 1959

# Advertisers in this month's

# Construction Methods AND EQUIPMENT



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Number of copies of this issue printed 50,971
A
Aeroquip Corp. 285 Alemite Div., Stewart Warner Corp 68, 133 Allis-Chalmers
(Construction Machinery Div.) . 8-9, 144-145 (Utility Tractors & Equipment Div.) 189
Allison Div., General Motors Corp 183 American Bridge Div., United State State Corp
American Chain & Cable Co. (Wright Hoist Div.)
American Hoist & Derrick Co
Allis-Chalmers (Construction Machinery Div.) 8-9, 144-145 (Utility Tractors & Equipment Div.) 189 Allison Div., General Motors Corp. 183 American Bridge Div., United States Steel Corp. 78-79 American Chain & Cable Co. (Wright Hoist Div.) 224 American Hoist & Derrick Co. 235 American Manganess Steel Div., American Brake Shoe Co. 6, 231 Austin-Western Works Const. Equip. Div. Baldwin-Lima-Hamilton Corp. 214-215
The state of the s
Barber-Greene Co. 57 Bay City Shovels, Inc. 21, 137 Bethlehem Steel Co. 33, 34-35, 36, 126, 128, 128
Blaw-Knox Co.
Boston Woven Hose & Rubber Co. Div. American Biltrite Rubber Co., Inc. 142
Blaw-Knox Co. (Construction Equipment) 139 Boston Woven Hose & Rubber Co. Div. American Biltrite Rubber Co., Inc. 142 Broderick & Bascom Rope Co. 2nd Cover Bucyrus-Erie Co. 77 Buffalo-Springfield Roller Co. Div. of Keehring Co. 159 Butler Bin Co. 207
Div. of Koehring Co
Case Co., J. I.
Case Co., J. I.  (Industrial Div.)  (Industrial Div
Chisholm-Moore Hoist Div., Columbus McKinnon Chain Corp 209 Cities Sarvice Oil Co.
Clark Equipment Co. (Automotive Div.)
(Construction Machinery Div.)42-43, 44-45, 46-47
Cleveland Trencher Co. 44-45, 46-47 202 Commercial Shearing & Stamping Co. 186-187 Construction Methods & Equipment 228-229 Continental Motors Corp. 28
Continental Motors Corp 26
D. A. Lubelanet Co. Inc.
D-A Lubricant Co., Inc. 219 Dayton Sure-Grip & Shore Co. 51 John Deere Industrial Div. 149 Detroit Diesel Engine Div., General Motors Corp. 58-59 Dietz Co., R. E. 111 Dixon Valve & Coupling Co. 224 Dodge Div., Chrysler Corp. 164 Douglas Fir Plywood Association 194-195
General Motors Corp
Dixon Valve & Coupling Co. 224 Dodge Div., Chrysler Corp. 164
Douglas Fir Plywood Association194-195
Eaton Mfg. Co., (Axle Div.) 108
Eaton Mfg. Co., (Axle Div.) 108 Economy Forms Corp. 232 Eimco Corp., The 3rd Cover Essick Mfg. Co. 37 Euclid Div., General Motors Corp. 69, 70-71, 72
Euclid Div., General Motors Corp. 69, 70-71, 72
Pinnton Pin & Ballon Co
Firestone Tire & Rubber Co. 238 Ford Motor Co., (Ford Div.) 24-35 (Ford Div., Industrial Engine Dept.). 163 (Tractor & Implement Div.) 169-179-171, 172-173, 174-175, 176 Frederick Iran & Steel Inc. 296
172-173, 174-175, 176 Frederick Iron & Steel Inc
Frederick Iron & Steel Inc. 206 Frushanf Trailer Co. 62-63 Fuller Mfg. Co. 193
General Flortric Co.
General Electric Co., (Lamp Div.) 138 GMC Truck & Ceach Div., General Motors Corp. 124-125
General Motors Corp

General Tire & Rubber Co. Goodail Rubber Co. Goodail B. F. Aviation Producta Div., The B. F. Goodrich Co. Goodrich Industrial Producta Co., B. F. Goodrich Tire Co., B. F. Div. B. F. Goodrich Co. Goodyear Tire & Rubber Co. (Metal Products Div.) Gorman-Rupp Co., The Griffin Wellpoint Carp. Gulf Oil Corp. 13	230
The B. F. Goodrich Co	122
Goodrich Tire Co., B. F. Div. B. F. Goodrich Co.	. 1
Goodyear Tire & Rubber Co. (Metal Products Div.)	. 17
Gorman-Rupp Co., The Griffin Wellpoint Carp.	118
H	4-199
Heitzel Steel Form & Iron Co. Hetherington & Berner, Inc. Hobbs Trailers Homelite Div., Textron Inc. Hose Accessories Co. Hough Co., Frank G.	74-75
Hobbs Trailers	. 184
Hose Accessories Co	20
Ingersoll-Rand Co. International Harvester Co. (Construction Equipment Div.)	. 206 18-29,
(Drott Div.)	30-31
(Drott Div.) (Farm Equipment Div.) (Motor Truck Div.) Iowa Mfg. Co.	38-39 . 181
1	
Jaeger Machine Co32	, 206
K Koehring Div., Koehring Co	0.161
The state of the s	
Laclede Steel Co.	222
Laclede Steel Ce. LaCrosse Trailer Cerp. 10 Lehigh Portland Cement Co. Lefourneau, Inc., R. G. 19 LeTourneau-Westinghouse Ce. 116-117, 119 Lima Works (Censt. Equipment Div.) Baidwin-Lima-Hamilton Cerp. 197	80 8-107 ), 121
	, 218
Mack Trucks, Inc. 52-53.	54-55
Mack Trucks, Inc.  Macwhyte Wire Rope Co.  Manitowoc Engineering Corp.  Marilow Pumps Div. Bell & Gossett Co.  Marquette Mfg. Co., Inc.  Masser-Ferguson Industrial Div.  Master Builders Co., The  Mayo Tunnel & Mine Equipment  McGraw-Hill Book Co., Inc.  Muller Tile-Top Trailer, Inc.  Moretrench Corp.	133
Div. Bell & Gossett Co	233
Massey-Ferguson Industrial Div	156
Mayo Tunnel & Mine Equipment McGraw-Hill Book Co., Inc	224
Moretrench Corp.	167
Neenah Foundry Co	209
	7
Oliver Corp., The	81
P	
Patent Scaffolding Co., Inc	112 73
R Remest Fastening System Winshester	
Ramset Fastening System, Winchester Western Div., Olin-Mathieson Chem. Corp.	56
Remington Arms Co., Inc. Richmond Screw Ancher Co., Inc. Rockford Clutch Div., Borg-Warner	227 223 158
Corp. Remington Arms Co., Inc. Richmond Screw Anchor Co., Inc. Rockford Clutch Div., Borg-Warner Rockwell Standard Corp. (Transmission & Axle Div.—Detroit). (Universal Joint Div.—Allegan, Mich.)	67

8	
Schield Bantam Co	141
Div. American Marietta Co	. 60
Sinclair Refining Co.	. 115
Smith & Co., D. B. Smith Co., The T. L.	188
Standard Dry Wall Products	234
Standard Oil Co. of California Standard Oil Co. of Indiana	19-19
Standard Steel Corp.	23
Standard Steel Corp. Stang Corp., John W.	. 200
Steel Joist Institute	192
Steel Joist Institute Superior Concrete Accessories, Inc. Symons Clamp & Mfg. Co.	2
Talbert Trailers Inc	162
Talbert Trailers, Inc. Texas Co., The 12-13 Thew Shovel Co. Timken Roller Bearing Co. 4th (	196
Thew Shovel Co	153
Trailmobile, Inc.	ever 82-81
U	
Union Oil Co. Unit Crane & Shovel Corp.	103
United States Envelope Co.	. 210
United States Rubber Co. (Mechanical Goods Div.) Universal Atlas Cement Co.	40
Universal Atlas Coment Co.	123
Universal Form Clamp Co	225
v	
Vickers, Inc.	217
Visking Co.	136
w	
Waco Mfg. Co	178
White Mfr. Co	. 168
Wright Hoist Div., American Chain & Cable Co., Inc	994
American Chain & Cable Co., inc	
The latest the second	
CLASSIFIED ADVERTISING	
F. J. Eberle, Business Manager	- 6
Employment Opportunities	237
(Used on Saraha New)	
(Used or Surplus New) For Sale	237
	200
Wanted Equipment	237
Equipment	441
	10
Control of the Control	7
SALES REPRESENTATIVES	
SALES REPRESENTATIVES	
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# Methods Memo ...



# **Mechanized Camel**

This is a French truck designed to carry a 100-ton load over rough desert terrain.

The manufacturer, Berliet, completed the first of these trucks about a year ago to haul equipment and supplies across the Sahara Desert to isolated oil drilling crews. An air conditioning unit mounted on the roof of the cab keeps the driver comfortable.

The big truck is 41 ft long, 6 ft wide, and 13 ft high. It rides on six Goodyear tires 8 ft in diameter and is powered by a 600-hp Cummins diesel engine.

It's not the biggest truck in the world. The 18-wheel, semi-trailer Western Contracting Corp. built to haul fill at Oahe Dam still takes the cake. Its box alone is 46 ft long, and it carries a 165-ton load (CM&E, April, 1958, p. 80).

Berliet says its truck attracted so much interest from Americans at the last Paris automobile show that they decided to exhibit it in the U. S. this year. Its first appearance will be at the International Petroleum Exposition in Tulsa, Okla., May 14-23, and it will be shown in New York the next month.

# Stronger Asphalt Paving

Engineers of the Shell Oil Co. say they have developed a resin that makes asphalt paving stronger, more wear resistant.

It's a petroleum derivative called Epon Resin. The resin and a plasticizer simply are added to a standard asphalt mix. No special machinery is needed to mix or place the material.

The first commercial application was at San Francisco International Airport where 3½ acres of asphalt paving around the United Air Lines maintenance base got a ½-in. overlay of the new material a few weeks ago.

But Shell has put the material through extensive laboratory and field tests. They claim Epon Resin Asphalt Concrete combines the flexibility of asphalt with the strength of concrete. In a comparative test, they say, a beam of the material deflected ½ in. and broke at 159 lb pressure. Conventional asphalt de-

flected ½ in. and failed at 15 lb pressure. Concrete deflected 2/100th of an inch and failed at 225 lb.

Shell says the new paving material is resistant to high temperatures and to the solvent action of jet fuel, gasoline, and hydraulic fluids. A test strip at Shell's San Francisco bulk plant has been under heavy truck traffic for 15 months and exposed to spilled gasoline, solvents, and lube oil without any sign of failure.

# **Don't Get Caught Short**

The threat of a steel strike in July means it may take longer from now on to get delivery of construction steel—even if the strike doesn't come off.

One reason is that a lot of contractors began buying the steel they will need in the third quarter of the year as early as January. The American Institute of Steel Construction says January orders for fabricated structural steel were 20% above the previous month's level and 45% higher than the total for January, 1958.

Buying of all types in anticipation of a strike pushed steel production to 89.5% of capacity in the first week of March. There's no real pinch yet, but the warning signs are out.

Some mills already are quoting longer delivery schedules. And New York warehouses say they may have to go on an allocation basis in the second quarter. Most other areas are not hit yet, but some mills say "scare buying" could delay deliveries within the next two weeks.

Steel warehouses generally are well stocked. Robert G. Welch, vice president of the American Steel Warehouse Association, says contractors should have little trouble obtaining the items they regularly buy from warehouses, even if there is a strike.

But he warns that contractors can't expect warehouses to fill all of the gap if a strike comes. Contractors who try to shift from mill buying to warehouse buying, he says, probably will be turned away.

Welch recommends that contractors protect themselves against a strike by ordering all the mill shipments they'll need during the third quarter for delivery by June 30. He says there's no need to stockpile warehouse items because supplies should be adequate.

### The First Million Miles

A fleet of 70 trucks is well into its second million miles on the \$22-million test road in Illinois sponsored by the American Association of State Highway Officials.

About 7,000 electrical devices measure the strains, deflections, pressures, and temperatures on the 716 test sections hour by hour. Testing will be completed late next year; a report will be published in 1961.

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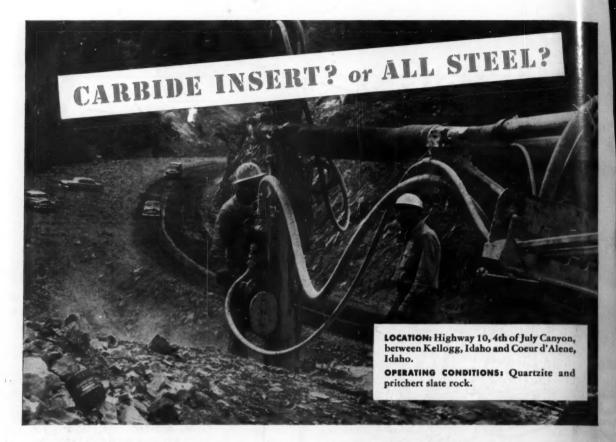
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# "We get more re-grinds per bit, lower cost with TIMKEN' carbide insert bits"

... Reports F. H. Slate and E. C. Hall Co.

N constructing 7.2 miles of new four-lane highway in 4th of July Canyon between Kellogg, Idaho and Coeur d'Alene, Idaho, F. H. Slate and E. C. Hall Co. must drill through quartzite and pritchert slate rock. Using Timken® carbide insert bits, they average 12 to 14 regrinds per bit, drill 20 to 100 feet of blast hole per pass. And with proper grinding, they use all of the carbide height with no fracturing of carbides when discarded. Bit cost per foot-of-hole stays at the minimum, production at the maximum.

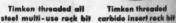
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